

Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

MONTHLY REPORT

OF THE

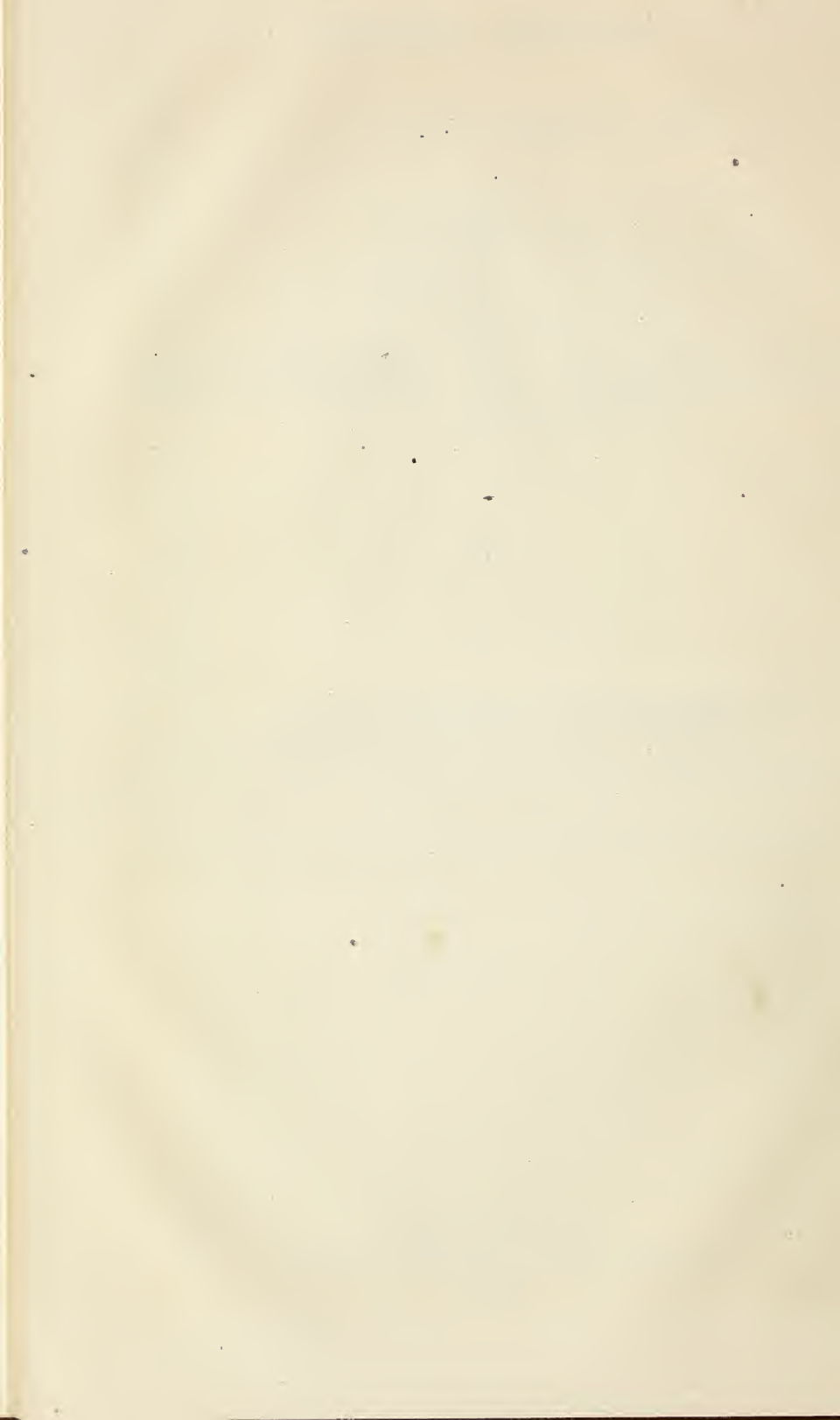
DEPARTMENT OF AGRICULTURE

FOR

FEBRUARY, 1872.



WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1872.



MONTHLY REPORT.

DEPARTMENT OF AGRICULTURE, STATISTICAL DIVISION,
Washington, D. C., February 29, 1872.

SIR: I herewith present, for publication, the results of the annual investigation concerning the prices of farm animals, and their numbers in comparison with the statement of the previous year; also, a brief account of the recent agricultural convention; an article upon forests and the public lands; a record of the yield and profit of agricultural operations on a western farm; notes of the garden; entomological records; chemical memoranda; scientific notes; and facts from various sources.

Very respectfully,

J. R. DODGE,
Statistician.

Hon. FREDERICK WATTS,
Commissioner.

COMPARATIVE NUMBERS AND PRICES OF FARM-STOCK.

The February circular to statistical correspondents, which invites statements of comparative numbers and prices of farm-stock in the counties of the several States, has been quite fully responded to; and a careful combination of these local estimates and statements of fact indicates a small increase in each kind of domestic animals, except sheep, in which a decrease of about one per cent. is apparent. The largest increase is reported in swine, amounting to six per cent., though their numbers had been thinned by the heavy operations of the pork-packing establishments. The Department estimate of fattening hogs in September was about twelve per cent. greater than in the previous year, and, in many of the Western States, an increase of fully 25 per cent. of swine, old and young together, was apparent. Horses and mules are credited with an increase of about 3 per cent.; milch cows, 2 per cent.; and oxen and other cattle, 1 per cent.

The only States in which a decrease of horses is presented are—Maine, 5 per cent.; New Hampshire, 4; Rhode Island, 2; Connecticut, 1, and California 1. An increase of 1 per cent. appears in New York,

New Jersey, Pennsylvania, Maryland, Mississippi; 2 per cent. in Massachusetts, South Carolina, Georgia, Louisiana, West Virginia, Ohio, Indiana, Illinois; 3 per cent. in Virginia, North Carolina, Alabama, Kentucky, Michigan; 4 per cent. in Florida, Texas, Tennessee; 6 per cent. in Wisconsin and Missouri; 7 per cent. in Arkansas and Oregon; 8 per cent. in Iowa; 16 per cent. in Kansas, and 20 per cent. in Nebraska.

In mules a loss of 1 per cent. is indicated in New York, Pennsylvania, and Indiana; of 2 per cent. in Kentucky; of 3 per cent. in Michigan; and 4 per cent. in California. The remaining States (New England unreported from paucity of numbers) show an increase in nearly the same ratio locally as in the case of horses. In Iowa and Kansas the increase of horses is much greater than that of mules.

In returns of milch cows, no States show a decrease except Maine, New Hampshire, Vermont, Rhode Island, and Connecticut. The apparent increase throughout the country is about two per cent., the greatest appreciation being in the new States receiving large accessions to their agricultural population, as 20 per cent. in Nebraska, 18 in Kansas, 10 in Iowa and Minnesota, 6 in Missouri and Arkansas, 5 in Wisconsin. Greater prominence is beginning to be given to the dairy interests in the South, the mountainous districts of which are admirably adapted, by reason of their mildness and equability of temperature, nutritious and abundant grasses, and cool springs, to the making of butter and cheese.

The failure of the hay crop in the Eastern States has caused a further reduction in the numbers of "oxen and other cattle," and a decrease is also reported in other States as follows: New York, 1 per cent.; Pennsylvania, 5; Georgia, 2; Florida, 4; Texas, 3; California, 5. Most of the Western States indicate more or less increase—Michigan, 2 per cent.; Illinois, 1; Wisconsin, 8; Minnesota, 10; Iowa, 7; Missouri, 5; Kansas, 15; Nebraska, 20; Oregon, 7. The aggregate increase is little more than one per cent.

The advance in the price of wool will stimulate the enlargement of flocks from the lambs dropped the present spring, but the stagnation in wool-growing of several years past was not removed in season to affect the number kept over the present winter. The States reporting a slight advance are Vermont, 6 per cent.; Texas, 9 per cent.; Arkansas, Michigan, Wisconsin, Kansas, Nebraska, (25 per cent.); California and Oregon, (16 per cent.) There has been an increase in the Territories, of which reports have not been very full.

Relative to swine, the numbers of last year have not been sustained in any of the Eastern States, in Maryland, Louisiana, and California. The Southern States appear to be giving more attention to the production of pork, and a marked increase of numbers is manifest in the Western States, those making the greatest advance being Nebraska, 35 per cent.; Kansas, 25; Iowa, 16; Missouri, 15; Illinois, 7; Indiana and Kentucky, 6 per cent.

PRICES.

The prices of farm-stock are still lower than in February, 1871, for all kinds excepting sheep, which have appreciated materially in value. While neat-stock will average lower rates, the decline is neither uniform nor universal; a demand for horned stock in the South, especially milch cows, having stiffened current prices in some localities, which are yet low compared with the better rates for improved northern cattle.

The decline in horses is quite general. In Texas a small advance is

noticed. A comparison with last year in a few of the States will illustrate the ratio of decrease.

States.	1872.				1871.			
	One year.	Two years.	Three years.	Over three years.	One year.	Two years.	Three years.	Over three years.
New Jersey.....	\$52.30	82.30	116.53	143.57	58.50	93.07	130.53	163.21
Georgia.....	38.70	61.41	87.36	113.29	40.20	63.54	92.53	129.45
Ohio.....	33.42	51.82	76.86	102.28	34.70	54.00	79.47	102.92
Kentucky.....	33.39	49.19	68.00	89.67	36.14	52.75	72.42	96.35
Illinois.....	28.43	41.83	59.90	88.26	28.57	44.60	66.66	93.93
Texas.....	12.43	18.72	30.08	46.23	12.06	18.19	26.96	45.52

The rates at which horses are held in Texas are still less than in any other State, but they are gradually advancing, the appreciation being more noticeable in the serviceable and salable ages than in yearlings or colts. The difference in values seen in the accompanying table is occasioned quite as much by breed and selection for special uses, as by the location with reference to the great centers of business and population.

The price of mules has declined nearly in the same proportion. As compared with the record of last year, the following examples of prices of animals three years old and upward, will illustrate this decline: In Illinois, \$114 44 to \$107 95; in Kentucky, \$115 14 to \$112 89; in Tennessee, \$128 to \$119 12; in Georgia, \$139 86 to \$130; in Texas, \$73 60 to \$67 60.

A heavy decline is recorded in the value of neat-stock. Prices are lower than for seven years past, except in Texas, where appreciation is resulting from the heavy drain upon the stock-reserves made for several years past by the drovers. In 1869 prices of cows attained their highest limit, since which date the tendency has been downward, especially during the past year. An illustration of the changes during this period, in different sections of the country, is presented in the following table:

States.	1872.	1871.	1870.	1869.	1868.	1867.	1866.
Massachusetts.....	\$39.87	59.16	57.00	67.50	67.11	59.80	62.00
New York.....	39.53	42.51	54.11	54.14	52.54	57.22	54.14
Pennsylvania.....	39.16	46.67	46.83	47.11	44.94	47.36	51.18
Ohio.....	37.36	45.09	44.77	43.00	43.07	44.94	47.33
Michigan.....	36.86	41.15	42.94	44.62	42.30	47.27	43.54
Illinois.....	33.77	37.68	37.02	38.11	36.62	35.90	34.84
Iowa.....	28.49	34.31	34.91	36.13	31.10	31.35	30.12
Missouri.....	25.85	31.92	32.32	31.21	29.04	29.86	32.87
Kansas.....	30.77	38.46	37.42	30.67	29.83	32.11	27.94
Tennessee.....	22.83	23.57	29.07	28.04	25.03	27.88	
Georgia.....	20.81	21.61	22.48	22.36	21.06	21.64	
Texas.....	14.12	12.83	10.67	9.12	10.29	11.20	

Oxen and other cattle have declined in value quite heavily in the Eastern States, partly as a result of the general depreciation, and obviously from the scarcity of hay and other feed, causing a feeling of discouragement unfavorable to high prices. In the Middle States, cattle of the age of three years and upward average about \$50; last year \$64. The ratio of decline has been small in the South, where the rates

are low, the breed inferior, and where the need of more and better stock is beginning to be felt. Lower prices prevail in the Ohio Valley, but in Wisconsin and Minnesota, where cattle are gradually assuming their place in the farm economy, as wheat culture becomes unprofitable, rates are very well sustained. In the Missouri Valley the depreciation is even heavier than in the Ohio Valley. It is hoped that the bottom has been reached, and that the prices of farm-stock may not continue to suffer a greater depreciation than that which affects other branches of productive industry.

Sheep are the only animals of the farm that command higher rates. The advance in price, with the enhancing value of wool, is greatest in the principal wool-growing States. In Vermont the average price of a sheep not less than one year old, has advanced since February of last year from \$2 75 to \$4 56; in New York, from \$3 37 to \$4 32; in Pennsylvania, from \$3 45 to \$3 70; in Ohio, from \$2 49 to \$3 37; in Michigan, from \$2 45 to \$3 14; in Illinois, from \$2 15 to \$2 90; in Iowa, from \$1 88 to \$2 41; in California, from \$2 84 to \$3 08; in Texas, from \$1 59 to \$1 73. The Southern States have few sheep, and have not felt the appreciation materially.

The decline in the value of hogs is very marked, as will be seen from a comparison of our returns for the past four years in the principal pork-producing States. Something of the difference noted in the average prices of the different States is due to degrees of improvement in quality, and difference in average weight, relative amount of feed, care, &c.

States.	1872.		1871.		1870.		1869.	
	Under 1 year.	Over 1 year.	Under 1 year.	Over 1 year.	Under 1 year.	Over 1 year.	Under 1 year.	Over 1 year.
Kentucky	\$2 55	\$5 71	\$3 65	\$8 30	\$4 26	\$10 88	\$4 46	\$10 35
Ohio	3 93	9 07	6 20	12 97	6 95	16 76	6 33	15 53
Michigan	3 54	8 06	5 39	13 34	5 27	12 97	5 29	12 40
Indiana	2 98	6 79	4 72	10 01	5 09	12 37	4 91	11 56
Illinois	3 78	7 48	5 79	12 71	6 32	13 65	6 15	15 23
Wisconsin	3 51	7 14	6 23	12 91	6 41	14 35	5 35	13 45
Minnesota	4 04	8 64	5 05	11 29	5 78	12 13	5 54	12 91
Iowa	3 71	7 94	5 23	12 79	6 47	14 90	6 02	14 41
Missouri	2 18	4 78	3 37	7 28	3 53	8 60	2 70	7 03
Kansas	4 27	9 25	6 93	14 73	5 16	12 73	4 95	12 46

Table showing the relative percentage of numbers and prices of farm-stock in February, 1872, as compared with the returns of February, 1871.

STATES.	HORSES.						MULES.						MILCH COWS.	
	Total number of horses compared with that of February, 1871.	Average price per head under 1 year old.	Average price per head between 1 and 2 years old.	Average price per head between 2 and 3 years old.	Average price per head over 3 years old.	Total number of mules compared with that of February, 1871.	Average price per head under 1 year old.	Average price per head between 1 and 2 years old.	Average price per head between 2 and 3 years old.	Average price per head over 3 years old.	Total number of milch cows compared with that of February, 1871.	Average price per head at this time.		
Maine.....	95	\$23 72	\$36 81	\$5 45	\$96 36	99	\$35 00	\$60 90	\$99 70	\$138 13	83	\$25 13		
New Hampshire.....	96	37 16	46 66	64 50	98 53	101	58 00	88 00	124 87	167 72	93	33 33		
Vermont.....	100	31 50	52 00	77 25	120 00	99	49 00	80 00	120 88	149 00	100	36 62		
Massachusetts.....	102	36 62	63 75	88 00	135 00	100	40 00	60 00	180 00	110 00	100	39 87		
Rhode Island.....	98	30 33	55 00	86 66	110 00	100	40 00	60 00	116 00	137 90	101	41 33		
Connecticut.....	99	36 75	63 75	89 00	115 00	99	41 77	65 40	73 51	119 87	96	39 87		
New York.....	101	40 59	67 41	94 58	130 58	101	58 00	88 00	124 87	167 72	101	43 10		
New Jersey.....	101	52 30	82 30	116 53	148 57	101	58 00	88 00	124 87	167 72	101	39 53		
Pennsylvania.....	101	40 53	66 58	96 13	126 65	100	40 00	60 00	120 88	149 00	100	54 80		
Delaware.....	100	35 00	50 00	70 00	100 00	100	40 00	60 00	120 88	149 00	100	39 16		
Maryland.....	101	42 91	67 33	94 16	114 16	100	41 77	65 40	73 51	119 87	101	32 00		
Virginia.....	103	33 79	53 06	77 61	101 56	100	41 77	65 40	73 51	119 87	102	24 93		
North Carolina.....	103	39 16	63 94	86 66	111 03	103	45 38	71 20	106 92	125 23	101	24 93		
South Carolina.....	102	36 25	58 12	85 62	112 50	104	46 16	72 33	107 00	127 50	105	23 65		
Georgia.....	102	38 70	61 41	87 36	113 29	103	45 67	70 88	105 80	130 00	103	20 81		
Florida.....	104	37 50	67 27	96 36	120 00	106	50 33	75 00	110 00	135 00	101	14 03		
Alabama.....	103	33 74	55 29	83 88	116 66	103	40 33	71 25	108 82	130 69	102	18 83		
Mississippi.....	101	30 66	48 00	71 00	110 00	101	38 50	60 55	91 11	122 50	101	25 00		
Louisiana.....	102	25 00	41 25	65 50	90 00	101	31 66	52 50	84 00	122 50	101	25 00		
Texas.....	104	12 43	18 72	30 08	46 23	105	19 11	29 21	43 65	67 60	101	14 12		
Arkansas.....	107	25 75	39 87	62 03	90 93	113	34 33	50 46	82 94	114 72	106	21 33		
Tennessee.....	104	40 20	58 77	81 70	105 37	104	46 12	69 25	96 54	119 12	104	22 83		
West Virginia.....	102	31 43	50 04	73 12	93 15	102	39 37	59 31	84 75	111 11	101	33 85		
Kentucky.....	103	33 39	49 19	68 00	89 67	98	40 37	61 25	91 92	112 89	101	32 51		
Ohio.....	102	32 41	51 82	79 86	102 38	101	37 73	61 57	87 76	115 09	101	27 36		
Michigan.....	103	32 91	52 43	79 86	108 56	97	37 77	59 44	83 88	117 00	104	36 86		
Indiana.....	102	28 43	44 29	62 77	88 42	99	33 92	53 39	77 03	102 04	102	33 57		
Illinois.....	102	28 43	44 29	62 77	88 42	99	33 92	53 39	77 03	102 04	102	33 57		
Wisconsin.....	106	31 32	51 92	71 32	100 88	100	35 05	54 76	73 41	107 95	102	33 77		
Minnesota.....	110	33 09	53 30	79 83	108 32	103	34 54	50 45	72 37	108 80	103	29 29		
Iowa.....	108	27 91	42 50	61 73	88 00	104	36 76	53 88	79 11	119 56	110	29 70		
Missouri.....	106	25 17	38 46	53 80	74 15	105	33 64	50 36	76 65	105 37	110	28 49		
Kansas.....	116	26 42	40 19	59 51	84 26	110	36 94	53 21	77 55	95 80	106	25 85		
Nebraska.....	120	29 00	46 33	70 00	95 62	118	36 94	53 21	77 55	95 80	118	30 77		
California.....	99	18 28	25 90	37 42	58 21	96	34 09	52 50	72 50	112 18	130	35 00		
Oregon.....	107	22 90	32 00	48 13	70 80	103	21 66	31 66	46 50	69 44	107	44 66		
Nevada and the Territories.....	114	21 21	35 08	47 94	70 80	115	27 15	41 53	60 89	111 50	115	34 12		
		21 21	35 08	47 94	70 80									

Table showing the relative percentage, of numbers and prices of farm-stock, &c.—Continued.

STATES.	OXEN AND OTHER CATTLE.					SHEEP.		HOGS.			
	Total number of oxen and other cattle compar- ed with that of February, 1871.	Average price per head under 1 year old.	Average price per head be- tween 1 and 2 years old.	Average price per head be- tween 2 and 3 years old.	Average price per head over 3 years old.	Total number of sheep compar- ed with that of February, 1871.	Average price per head under 1 year old.	Average price per head over 1 year old.	Total number of hogs compared with that of February, 1871.	Average price per head under 1 year old.	Average price per head over 1 year old.
Maine.....	78	\$7 40	\$12 81	\$20 22	\$41 20	84	\$2 47	\$3 29	91	\$8 32	\$15 00
New Hampshire.....	88	10 00	18 50	30 33	53 33	94	2 50	3 08	92	9 50	18 25
Vermont.....	93	9 90	16 50	26 62	53 62	106	3 39	4 56	92	7 37	16 00
Massachusetts.....	98	9 37	18 25	29 62	54 75	93	2 39	3 92	95	9 68	18 37
Rhode Island.....	91	12 66	17 66	25 00	50 99	93	3 00	3 83	91	9 33	14 00
Connecticut.....	91	11 60	20 30	32 20	52 40	98	3 35	4 60	94	9 60	17 75
New York.....	99	11 44	21 00	33 67	50 70	99	3 13	4 32	103	5 63	12 50
New Jersey.....	102	15 50	24 92	37 33	54 03	96	4 52	5 27	110	7 35	16 60
Pennsylvania.....	95	10 33	19 46	32 50	47 41	95	2 54	3 70	105	4 93	11 92
Delaware.....	105	6 00	12 00	18 00	28 00	100	4 00	5 00	100	4 00	8 00
Maryland.....	101	9 00	14 25	21 75	32 75	94	3 37	4 37	99	4 04	8 35
Virginia.....	102	7 23	11 80	18 82	27 96	98	2 91	2 87	107	2 86	5 74
North Carolina.....	103	4 10	7 05	11 40	17 31	94	1 12	1 72	104	2 30	5 10
South Carolina.....	103	5 38	8 53	13 35	23 00	98	1 16	2 17	107	3 33	7 25
Georgia.....	98	4 55	7 51	11 13	16 15	96	1 14	1 66	107	2 61	5 47
Florida.....	96	3 45	5 22	8 72	13 75	95	1 16	1 93	103	2 03	4 80
Alabama.....	104	3 36	6 65	10 17	15 64	94	1 19	2 04	109	2 59	6 88
Mississippi.....	102	4 70	7 90	12 96	21 47	87	1 15	2 35	108	2 50	6 31
Louisiana.....	103	5 94	9 00	13 00	18 15	86	1 54	2 35	96	3 31	8 12
Texas.....	97	3 10	4 86	8 07	12 52	109	91	1 73	106	2 04	4 67
Arkansas.....	106	4 34	7 44	12 88	21 19	109	1 64	2 51	120	2 84	6 77
Tennessee.....	103	4 89	8 85	13 88	21 38	98	1 32	1 89	104	2 59	5 54
West Virginia.....	100	8 70	16 31	25 62	37 52	96	1 84	2 58	104	2 82	6 14
Kentucky.....	100	10 16	16 43	26 17	39 41	96	1 95	2 84	106	2 55	5 71
Ohio.....	100	10 67	18 81	29 70	45 16	98	2 36	3 37	102	3 83	9 07
Michigan.....	102	8 34	16 30	27 21	46 18	103	2 03	3 14	103	3 54	8 06
Indiana.....	100	8 34	15 22	25 62	36 53	93	1 90	2 76	106	2 93	6 79
Illinois.....	101	9 34	15 81	24 93	36 40	96	1 97	2 80	107	3 78	7 48
Wisconsin.....	108	9 10	15 84	23 56	42 38	104	2 01	2 88	100	3 51	7 14
Minnesota.....	110	7 53	14 40	23 56	38 46	104	1 78	2 90	115	4 04	8 64
Iowa.....	107	7 81	14 28	23 21	36 16	100	1 58	2 41	116	3 71	7 94
Missouri.....	105	6 76	12 24	19 68	29 72	92	1 48	2 14	115	2 18	4 78
Kansas.....	115	7 74	13 90	21 88	31 42	101	1 71	2 56	125	4 27	9 25
Nebraska.....	120	8 00	15 65	25 62	37 20	125	1 89	2 66	135	4 71	8 75
California.....	95	11 06	17 96	26 46	36 33	101	1 91	3 08	96	3 94	8 41
Oregon.....	107	12 95	19 72	29 40	39 36	116	1 72	2 70	106	3 02	6 10
Nevada and the Territories.....	125	8 81	15 29	26 01	38 29	115	2 19	3 54	119	7 95	14 89

EXTRACTS FROM CORRESPONDENCE.

The following extracts from regular correspondence may be taken as samples of memoranda, accompanying figures for tabulation:

Piscataquis County, Me.—A great reduction in numbers and prices of stock of all descriptions, resulting from the scarcity of hay.

Middlesex County, Mass.—The scarcity and high price of hay has reduced the number of neat stock. Hogs have also fallen off in number, on account of the low price of pork. Fancy horses have increased in numbers.

Berkshire County, Mass.—Horses number about the same as they did a year ago, but are cheaper. All horned animals have fallen in price; cows selling very low, from \$25 to \$65. Sheep and hogs have increased in numbers.

Kent County, R. I.—In consequence of the great scarcity of hay, all descriptions of stock have fallen off greatly in numbers, all passable beeves having been sent to the butcher last fall. Horses have also been greatly diminished in number.

Tolland County, Conn.—The short crop of hay has caused a diminution in numbers and prices of beef-stock.

Hartford County, Conn.—The milk demand has increased the number of milch cows, while oxen have fallen off in number.

Warren County, N. Y.—The scarcity of hay has compelled farmers to sell off their young cattle and sheep. Oxen and other cattle bring low prices.

Onondaga County, N. Y.—Cows have been low, but the price is advancing. Farmers incline to increase their sheep-flocks on account of prices of wool. More mules raised and used than ever before.

Genesee County, N. Y.—Milch cows have fallen off greatly in price; more sellers than buyers. Sheep have increased in value.

Camden County, N. J.—The short hay-crop has caused a diminution in prices of milch cows.

Armstrong County, Pa.—A scarcity of fodder has reduced the number of cattle. Hogs have been plenty and cheap, and are considered unprofitable in this season of scarcity. Horses have increased in numbers, but are somewhat cheaper on an average, though extra good ones are high, bringing \$200.

Elk County, Pa.—Milch cows are much higher than usual, as many were killed in the fall for want of feed. Asking prices range as high as \$55 to \$60 for fresh cows.

Bradford County, Pa.—Prices of most kinds of stock have fallen off nearly one-half, during the past year, but cows and horses maintain a good price.

Prince George's County, Md.—The stock of hogs has been diminished, owing to the low price of pork.

Clarke County, Va.—Cattle number about the same as last year; there are more young animals, but few fat cattle, and very few are purchased to graze. Milch cows are more numerous and cheaper. Sheep have increased in number and in mutton quality; more have been bought to fatten than last year. Horses have increased about ten per cent. in number, but prices are lower.

Prince George County, Va.—Cattle have been reduced five per cent. in numbers by an epidemic which prevailed here last summer. The number of hogs has fallen off about twenty per cent. The number of sheep has more than doubled, and lambs sell readily at from \$3 to \$5. The lumber business has caused an increase of ten per cent. in the number of mules.

Orange County, Va.—This county is beginning to assume its former standing as a grazing district. All kinds of stock have slightly increased except sheep.

Powhatan County, Va.—Prices of cattle are low. Hogs have increased in number and quality, on account of the mast crop.

Stanly County, N. C.—Cattle are more numerous and their prices lower. The stock of sheep is diminishing every year, from neglect and ravages of dogs. Cholera has made much havoc among hogs, but the price of pork is low.

Harnett County, N. C.—Half of the sheep in this county have been destroyed during the past year by dogs and thieves.

Surry County, N. C.—An increase in the number of horses, mules, and cattle, and a decrease in prices. Sheep have decreased in numbers, owing to slaughter for food and destruction by dogs.

Washington County, Texas.—Pigs six months old sell for \$10 each.

Fayette County, Texas.—Sheep rapidly disappearing westward.

Williamson County, Texas.—There is every spring a demand for ponies to drive stock with. The number thus driven has cut down the home stock 10 per cent. Mast-fed pork sells at 4 cents; corn-fed, 5 cents per pound.

Bexar County, Texas.—Merino ewes bring \$5 in gold.

De Witt County, Texas.—Fifty per cent. of our cattle have died in two weeks, grass being scarce. Sheep, horses, and hogs doing well.

Putnam County, Tenn.—Planters south raising more stock, which cuts down our market.

Monroe County Tenn.—Horses and mules have increased, from the failing demand or the South. Some sheep sent to Virginia.

Knox County, Tenn.—Declining demand for stock has discouraged shipments. Hence all kinds are increasing in number.

Giles County, Tenn.—Wool worth 65 cents; more dogs than sheep here.

Larue County, Ky.—Mules are low-priced, because the choice animals have been shipped to market.

Butler County, Ky.—Price of wool has increased; large numbers of sheep sold, to be driven out of the county. Hogs have increased on account of the mast.

Lincoln County, Ky.—All the marketable mules have been bought up. Demand for cattle improved, but not so great as last year. Active demand for sheep for slaughter.

Adair County, Ky.—More grass and stock raised than under the slavery régime. This branch of industry increasing. Prices of stock are low.

Hardin County, Ky.—Beef-cattle, 4½ cents choice; fat hogs, 4 cents.

Medina County, Ohio.—Horses and cows not increased; sheep increasing, owing to increased demand for wool; hogs decreasing; pork selling in Cleveland at \$5 per hundred-weight. Two fatal cases of *Trichina spiralis* in that city, and other cases not so serious, have made pork unpopular, and cut down prices 12 per cent. Demand for beef and mutton increasing. Cleveland is becoming a great market for farm products.

Henry County, Ohio.—Fat hogs weighing 200 to 400 pounds, bring \$3 80 live weight, and \$4 to \$5 dressed.

Lorain County, Ohio.—Stock of cattle decreasing and sheep increasing, especially long-wooled sheep; sheep have done finely where well cared for; prospect of better prices of wool encourages better treatment. Scarcity of fodder has cut down the prices of cows. All kinds of farm stock healthy.

Morrow County, Ohio.—Demand for horses less than formerly; cattle lower in price, but rising; sheep higher than for several years, on account of advance in wool. Long-wooled sheep bring from \$10 to \$20; their number increasing.

Franklin County, Ohio.—Mules in demand for farm work; sheep scarce and high; horse breeds improving.

Montcalm County, Mich.—Hogs plenty; pork averaging \$5 per hundred-weight, and beef, by the side, \$5.

Cass County, Mich.—Sheep are the favorite stock, while hogs are disregarded.

Calhoun County, Mich.—Low prices of beef, pork, and dairy products have depressed cattle and hogs. Sheep have appreciated.

La Porte County, Ind.—Horses mostly small or medium sized, hence they do not bring good prices. Heavy draught-horses are in great demand at high prices. There is a small sprinkling of Durham blood in the cattle, which adds to their market value.

Martin County, Ind.—Sheep reduced in numbers by heavy sales to drovers, to be sent east and south.

Cass County, Ill.—Stock of horses gradually increasing, with diminution in prices. Abundant corn leads to feeding more cattle than last year; 5,000 beef cattle feeding in the county. Sheep scarce, on account of low prices of wool. Hog crop increased 25 per cent.

Williamson County, Ill.—Large number of sheep shipped for mutton, which, with the advance in wool, has doubled the prices of last year.

Bureau County, Ill.—Sheep raised in price, but less in number.

Fond du Lac County, Wis.—Sheltered stock looks extremely well.

Green County, Wis.—Only the best class of horses salable.

Pierce County, Wis.—Sheep rising in price; hog-raising will be less lively next year, through present low prices.

Dodge County, Minn.—Great increase of bees; number of swarms double of last year.

McLeod County, Minn.—Unexpected demand of the Hudson Bay Company, and the great fires, have reduced the stock of cattle.

Pocahontas County, Iowa.—Prices of all kinds of stock have fallen greatly in a year.

Marion County, Iowa.—Prices of horses, mules, and cattle but little more than nominal.

Linn County, Iowa.—All kinds of stock lower than for six years.

Jefferson County, Iowa.—Large numbers of stock cattle taken to Illinois. Hogs increased.

Harrison County, Iowa.—Horse stock improving; geldings bringing \$200, and stallions as high as \$2,000. But in many cases horses decline in price from overdriving.

Franklin County, Mo.—All sorts of live stock, except sheep, lower than ever known.

Phelps County, Mo.—Stock prices low; sheep decreased by ravages of dogs.

Vernon County, Mo.—Horses and mules increased 27 per cent. in numbers, and declined 30 per cent. in price. Cattle declined 9 per cent. in numbers, and 33 per cent. in price.

Perry County, Mo.—Low price of wool depressed the number of sheep, but it is enlarging.

Ellsworth County, Kansas.—Thousands of Texas cattle, driven into the county, have died.

Ripley County, Kansas.—Number of all kinds of stock increased, and prices decreased.

Nemaha County, Nebraska.—Sheep husbandry stimulated by advance in wool.

Seward County, Nebraska.—Large increase in numbers of stock on account of immigration.

Webster County, Nebraska.—Heavy losses among Texas cattle.

Washington County, Nebraska.—Oxen going out of use; cows and stock cattle increasing.

NATIONAL AGRICULTURAL CONVENTION.

The following call was issued by the Commissioner of Agriculture for a meeting of the representatives of scientific and practical agriculture of all sections of the country:

DEPARTMENT OF AGRICULTURE,
Washington, D. C., December 20, 1871.

SIR: By the act of the 2d July, 1862, Congress donated to the several States a-portion of public lands, in the ratio of their population, for the purpose of establishing agricultural colleges, thereby evincing a purpose to promote that great interest, through the instrumentality of the respective States. Many colleges have been, and doubtless many more will be, established. State agricultural and horticultural societies and boards of agriculture have also been established by law in many States. A correspondence and consultation between friends of these interests have led to the conclusion that a convention of delegates representing them, for the purpose of conferring upon subjects of mutual interest, would promote the good of all. It has been suggested that I take the responsibility of initiating such a meeting. I therefore propose that each agricultural college, State agricultural society, State horticultural society, and State board of agriculture, depute two delegates to meet in convention at the city of Washington, on Thursday, the 15th of February next, to take such action regarding the interests of agriculture as they shall deem expedient.

I am, very respectfully,

FREDERICK WATTS,
Commissioner.

Responding to this call, delegates from agricultural colleges and State societies, agricultural and horticultural, met in convention in the library hall of the Department of Agriculture, on the morning of the 15th instant. Several district and county societies, and at least one town club, presented delegates, all of whom were ultimately received as members of the convention.

The Commissioner, in a brief opening address, welcomed the delegates, referred to the college land grant of 1862 as an earnest of the disposition of Congress to assist in promoting the interests of agriculture, and asked the co-operation of the bodies represented in the convention, in the work of the Department of Agriculture.

Professor J. B. Bowman, regent of Kentucky University, was made temporary chairman. A committee on organization, consisting of thirty-four members, was appointed, and the permanent officers of the convention were elected, as follows:

President.—Dr. George B. Loring, of Massachusetts.

Vice-Presidents.—Alabama, S. G. Reid; Arkansas, Thomas Smith; Connecticut, E. H. Hyde; Georgia, Hubert Fielder; Delaware, W. H. Purnell; Illinois, J. O. Cunningham; Indiana, Thomas Dowling; Iowa, E. R. Shankland; Kansas, Joseph Denison; Kentucky, J. B. Bowman; Maine, S. L. Goodale; Maryland, A. B. Davis; Massachusetts, W. S. Clark; Michigan, T. C. Abbott; Minnesota, W. S. King; Nebraska, D. H. Wheeler; New Hampshire, Natt Head; New Jersey, George F. Cook; New York, Ezra Cornell; North Carolina, N. W. Woodfin; Ohio,

J. P. Robison; Pennsylvania, H. N. McAllister; Rhode Island, Geo. F. Wilson; South Carolina, D. W. Aiken; Tennessee, Hunter Nicholson; Texas, Wm. J. Hutchins; Vermont, Crosby Miller; Virginia, Thomas Branch; West Virginia, A. Martin; Wisconsin, Hon. G. W. Hazleton; District of Columbia, Chalkley Gillingham; Department of Agriculture, Wm. Saunders; Utah, James McKnight.

Recording Secretary.—R. F. Johnstone, of Michigan.

Reading Secretary.—C. W. Murtfeldt, of Missouri.

Corresponding Secretary.—J. R. Dodge, Department of Agriculture.

The business committee, consisting of one from each State represented, made a preliminary report, recommending four topics for consideration, viz: 1. The expediency of seeking further land-grants from Congress in aid of industrial education; 2. The expediency of establishing experimental farms and stations; 3. The propriety of modifying the military instruction given in the national colleges of agriculture and mechanic arts; 4. The best methods of co-operating with one another and the Department of Agriculture.

A paper was presented by the Commissioner, suggesting action of the convention, as follows:

The act of July 2, 1862, is an earnest expression of Congress that a scientific education is essential for development of agricultural knowledge, and evinces the determined purpose of the Government, through the agency of State legislatures, to establish institutions of learning, where the youth of the country may be trained and properly fitted to elevate the standard of active, practical life, and secure for it the increased fruits of skillfully directed labor. It becomes those, therefore, who are directly interested in this subject, to take active measures to second the effort, and make use of the measures which have been adopted by Congress for their benefit. In the prosecution of this object, it is manifestly the duty of individuals interested in its promotion to examine the subject, and point out the detailed processes by which the design and bounty of Congress may be made most available.

This convention, composed of such as have taken an active part in the prosecution of agricultural study, has been convened to consider this. That the points which necessarily present themselves may be duly considered, we present the following resolutions:

Resolved, That it will greatly conduce to the successful operations of agriculture throughout the world, that its operators should have the light of scientific knowledge to guide the work.

Resolved, That we recognize in the act of Congress of July 2, 1862, the foundation upon which may be organized and built colleges and schools, where the scientific principles and knowledge of agriculture may be taught, and that it is our anxious desire and duty to foster and encourage them in the work of educating farmers.

Resolved, That in the establishment of agricultural colleges and schools, their organization should embrace the following principles:

1st. They should be distinctively agricultural in their government and teachings; that while no branch of learning shall be excluded, whether it be the knowledge of language, of mechanics, or military tactics, yet the main design shall be a knowledge of all those branches of natural and exact science and practical skill which peculiarly belong to a finished agricultural education.

2d. That in any such college or school, actual manual labor should be practiced and taught.

3d. That females, as well as males, may be admitted as pupils.

Resolved, That horticultural and agricultural societies, and agricultural

colleges and schools, are co-laborers in the same field, and tend to promote the same object—the proper cultivation of the soil; and that all these should unite on any plan of education by which the light of knowledge should be made to shine upon their work.

Resolved, That the Department of Agriculture is also a creature of the Government, established for the same great purpose of cherishing and promoting the interests of agriculture, and that its efficiency must necessarily depend upon its intimate connection with all other agricultural institutions which exist in this and foreign countries; and we therefore recommend to the said Department that it establish such a relation with the agricultural colleges and schools, and horticultural and agricultural societies, as that there may be a continuous exchange of information, seeds, roots, plants, and publications as shall be mutually advantageous, and conduce to the leading agricultural and horticultural interests of the country.

These resolutions were adopted by the convention.

Upon the first topic of regular business, relative to further aid to agricultural colleges and schools, Mr. Folwell, president of the Minnesota University, illustrated the injustice of the distribution of lands, deprecating the departure from the precedent of apportionment by territory rather than by population. Mr. Gregory, regent of the Illinois University, deemed unjust an apportionment of land to States having public lands, and scrip to those having none, and favored a new apportionment to common, normal, and high schools, and agricultural and other colleges, as follows:

1st. One-third of the fund, or the income of, to be apportioned to the States on the basis of the number of children between the ages of six and fifteen years, to be used in the payment of teachers' wages or the purchase of school libraries, on such plan as each State may determine.

2d. One-third to be apportioned to the several States on the same basis as before, to be used in support of normal schools and of normal classes in high schools, in such way as the several State legislatures may determine: *Provided*, that at least one-half of such fund shall be apportioned to the several schools in the proportion of the number of the normal pupils who shall complete the normal course and pass the examinations prescribed by the superintendent of public instruction or other proper State authorities; and,

3d. The remaining third to be apportioned to the several States as follows: One-half on the basis of the population of such States, and one-half on the basis of area of the States, to be used in support of the agricultural, polytechnic, and other State colleges and universities, in such way as the several States may determine.

These propositions, after discussion, were referred to a committee of five members, and made the special order for the opening hour of the second day.

On motion, the following special committees were appointed by the chair:

Equalization of land-grants.—Folwell, Minnesota; Bowman, Kentucky; Gilman, Connecticut; Abbott, Michigan; Fielder, Georgia.

Military education.—Gregory, Illinois; Clark, Massachusetts; Clark, Vermont; Alvord, Virginia; Klippart, Ohio; Welch, Iowa.

Experimental stations.—Nicholson, Tennessee; Needham, Massachusetts; Hamilton, Pennsylvania; Johnston, Connecticut; Allen, New York.

Co-operation with the Department of Agriculture.—Barnett, Georgia;

Curtis, District of Columbia; Smith, Vermont; Reynolds, Illinois; Robison, Ohio.

On the morning of the 16th, the business committee, through Commissioner Watts, reported a recommendation: 1. For the appointment of a committee of five upon the best methods of preserving the timber of the country, especially of the Rocky Mountains and the central prairie regions of the republic; 2. That boards of agriculture be established in all States in which they do not already exist; 3. That a committee of five be appointed to visit Congress and request an increase of appropriations for the distribution of publications and seeds by the Department of Agriculture. The report was adopted.

The committee on the equalization of land grants reported resolutions to remedy both the inequality and insufficiency of the grant of 1862, by an additional distribution of not less than one million acres to each State, to be selected and located at the pleasure of the grantees. After a very full and general discussion, and presentation of numerous amendments, the substitute of Mr. Gregory, of Illinois, was adopted, recommending to Congress the bestowal of an additional grant of land, or proceeds of land, upon all colleges established or to be established under the grant of 1862, and the appointment of a committee of one from each State to urge this proposition upon the attention of Congress.

The committee upon co-operation with the Department of Agriculture made a report, closing with the following recommendations:

1. That the several societies and colleges have some specific organ of communication with the Department of Agriculture, the person, time, and topics known, and that the Department prescribe the topics, with appropriate printed inquiries.

2. That an annual convention, like the present, be held, in which representatives from the several State societies, and other societies covering a larger or smaller area, and the agricultural colleges, may be represented on some proper basis.

3. That the Department tabulate the information thus obtained, and distribute it among the several lesser organizations. Among the subjects to be presented shall be the briefs of all the organizations of States and other large district societies, with such revision and suggestions as may aid in determining the best mode of organization.

4. That the several State societies co-operate fully with the Department in obtaining statistics of every sort—especially of growing crops—and make suggestions as to improved methods of estimating them; also, in such observations upon the weather as may greatly increase the data for determining the local varieties of the seasons. The degree of success already attending the observations made, give encouragement to this direction of inquiry—to be made in detail, to determine the local laws, and for larger periods, to anticipate the probable state of the season, and possibly to influence them to some extent, or at least better to conform to them.

5. The Department shall consider the entire field of investigation, and assign to the several State societies appropriate subjects of observation, and also subjects for scientific investigation by the agricultural colleges and professors.

6. It shall collate information as to the practical working of different forms of minor organizations, less than State societies, so as to exhibit the best and most approved form of clubs for the immediate information and education of the farmer at his work, making them schools for the ear and eye alike.

7. Prior to the assembling of the national convention, specific sub-

jects of consideration shall be prescribed, and persons of high qualifications appointed to open the discussions.

8. That for each duty a specific organ, whether of the Department or the societies, shall be provided, either by the appointment of an individual or a committee. Thorough elaboration of information, and proper digestion of matter for publication, shall, if possible, be the duty of some officer of the Department.

9. That among the subjects for reports at the next convention held, according to the first resolution, be the following:

First. On the importance and means of improving physical expertness in agricultural labor, the object being to devote to the development of human skill the attention too much confined to the horse and the brute creation, and a report to be presented concerning expertness in farm-labor.

Second. On the importance to farmers of accurate accounts of expenses, receipts in detail, and of careful study of these, as a means of constant annual improvement.

Third. On the best means of organizing neighborhood associations for mutual improvement.

Fourth. On the best method of conducting experiments, and the necessity of careful records, and of separating the conditions involved.

10. That copies of this report be communicated to the several State societies and agricultural colleges of the United States, and they be requested to communicate their action in regard to the proposed relations to the National Department of Agriculture, and of the persons appointed as organs of communication.

This report was accepted, and referred to the Department of Agriculture.

A resolution, presented by Senator Morrill, of Vermont, favoring a donation of land, or the proceeds of land, sufficient to found a professorship of one of the branches of practical science in the land-grant colleges, and the assignment to each, by the War Department, of an officer of the Army competent to give mathematical and military instruction, was adopted.

General N. N. Halstead, of New Jersey, offered a resolution recommending a provision by State and county agricultural societies, for a scholarship in agricultural colleges for each county, and also a provision on the part of agricultural colleges, requiring a satisfactory examination of students by a committee of practical farmers, before a diploma can be given, which was also adopted.

A resolution offered by Mr. J. N. Sturtevant, of Massachusetts, commending the plan of the agricultural and economic museum of the Department to the agricultural colleges of the country, was adopted. Also, one presented by Professor C. V. Riley, of Missouri, asking an appropriation to enable the Department of Agriculture to publish the illustrated work of its entomologist, Townend Glover, on insects; and an annual appropriation of not less than \$10,000 for defraying the cost of experiments in the destruction of noxious insects, to be made by the different State boards throughout the country.

Prof. Hunter Nicholson, of Tennessee, chairman of the committee on experimental stations, reported a resolution instructing Professor S. W. Johnston, of Yale College, to make an investigation of the workings of experimental stations in Europe, and report further upon their character and value, and the practicability of their establishment in this country, as an aid to scientific agriculture. Adopted.

A resolution was adopted recommending the increase of the salary of

the Commissioner of Agriculture from \$3,000 to \$6,000, and one favoring an increase of the salaries of the statistician, entomologist, and superintendent of gardens and grounds, from \$2,000 to \$4,000 respectively.

The following views of the results of the convention are presented by the Commissioner of Agriculture :

The late convention, convened at the instance of the Commissioner of Agriculture, has afforded an ample opportunity to the Department to accomplish the object it had in view—a knowledge of the men who, for the present, have in their hands and direct the destinies of the agricultural interests of the country, and some knowledge of the instrumentalities through the medium of which they operate. The assemblage was mainly made up of the principals and professors of agricultural colleges, whose origin may be traced to the act of Congress which made provision for their establishment; presidents and secretaries of agricultural and horticultural societies, and the chief men who compose boards of agriculture of the different States. It was reasonably supposed that the experience and knowledge of such an assemblage of men would shed much light upon a subject which, at this moment, so occupies the public mind. While every branch of industry, commerce, manufactures, and the art of war itself, is anxiously watched and cared for by the action of the Government, it was very natural that they who have sought to promote the great cause of agriculture should seek an opportunity to confer together about what should be done to invoke the good offices of the Government in their behalf. The Commissioner of Agriculture, in view of the necessity of a co-operation of the Department with those active and energetic men who in their respective communities had been selected for their ability, to give a right direction to the subject, very naturally hit upon the idea that agricultural colleges that owed their existence to the immediate provision which Congress has made for them, like his own Department, depending upon its will and pleasure, would be most likely to respond to an invitation which invoked only a consultation upon a subject of common concern. It was not without some hesitation that the Commissioner ventured to draw upon the services of this class of men, because he felt that the draught involved an expenditure of time and money, which, though it might be repaid by the good which would result from such a conference, might be considered by others an assumption on his part which the occasion did not justify; and yet to exclude those who had thus voluntarily devoted themselves to the work of promoting the cause of agriculture, to lose the benefit of their counsel, and the opportunity to acquire a personal acquaintance of them, led to the conclusion to enlarge the number, at the risk of affecting the business capacity of the convention by reason of its numbers; so that the design ultimately was to invite two delegates from each of the colleges and State agricultural and horticultural societies, and State boards of agriculture. All these came and more, and before the convention adjourned no one was refused admission who pleased to apply. And every interest, feeling, and project was represented.

The business committee, (composed of one from each State,) at the outset of the meeting, made a report, which had been previously prepared by the Commissioner, recognizing the act of Congress of 1862 as the expression of the purpose of the Government to establish agricultural colleges in the States, and endow them with a fund commensurate with the great necessity for the introduction of scientific knowledge into the

practical operations of agriculture, and recommending an immediate connection and correspondence between the Department and these institutions, on all subjects pertaining to experiments in the science and practice of agriculture, and pointing out some points of the basis upon which they should be made to stand. This was all a committee, composed of so many members, could do, and this action was unanimously adopted by the convention. All else, the work of the convention, had its origin in resolutions proposed by its individual members, which were as various as the different projects which were calculated to affect agricultural interests. The disposition of the public lands, how they should be best appropriated to promote the success of the colleges and of education generally, was discussed in all its phases; the threatened destruction of forests, how they might be preserved and increased, claimed the attention of the convention as a subject of important interest, and the action of Congress was strongly invoked to pass such laws as would induce purchasers and owners of public lands to protect the timber yet in forest, and plant upon the prairies, where now there is no timber.

The whole doings of the convention made the impression that the conference had been a profitable one; that it had linked the Department with the agricultural institutions of the country; that each might profit by the aid of the other, and that both would act in harmony to promote the common good.

FORESTS AND THE PUBLIC LANDS.

The following views on the conservation of forests of the public lands, and on the proper basis of land-grants for educational purposes, are those personally entertained and presented by the Commissioner of Agriculture:

The public lands and the disposition which shall be made of them by the Government of the United States is a subject of such magnitude and importance, and so nearly allied to those agricultural interests of the country which this Department has in charge, that the duty devolves upon me to observe and carefully scan any movement with regard to them which has a tendency to disturb or promote the ultimate progress and improvement in the cultivation of the soil.

The destruction of the forests of the country, which is now going on with so fearful rapidity, should arrest the attention of Congress long enough to institute the inquiry, What can be done to prevent so great a calamity as that which now threatens us?—the want of a sufficient quantity of timber to meet the actual necessities of life, and, what is of equal importance, the climatic influence which will be occasioned by denuding the earth of its timber, and plants of the shelter and protection which it affords. It is not my purpose to stop here and inquire into the philosophy of the causes of water-fall; nor how the electrical rain-bearing clouds are dissipated before their watery elements can reach the earth. These are points which I prefer to leave to scientists, and which, happily, I think, they have not overlooked, but, on the contrary, have brought much learning to bear upon them, which may ripen into conclusions which will be received as practical truths. It is enough for us now to know the palpable facts that our springs of water, and the streams that issue from them, are greatly diminishing in volume; that our wells have not the depth of water they formerly had; that our crops suffer

for want of rain to an extent that was not so common in olden times; and we do know that where these changes have occurred, the country has been stripped of its timber, and its fountains, springs, and streams laid bare to the broiling sun and unbroken winds. These facts, put together, exhibit a practical cause and effect with an apparent force of truth which should command our attention, and induce the inquiry whether the Government may not interpose its power and influence to protect the timber-lands of the country. There are yet thousands of millions of acres of public lands undisposed of, and, as to them, I beg leave to suggest that, from this time forth, no disposition shall be made of them for any purpose or for any consideration, pecuniary or otherwise, without a provision imposing a condition, to be inserted in the warrant or patent, as the case may be, that the grantee shall keep at least ten per cent. of the lands so granted in timber, if there be so much, and, if not, that he shall be allowed a credit of twenty per cent. of his purchase-money as an inducement to plant so much of his land in timber; and to insure the performance of the condition, a failure on the part of the purchaser should work a forfeiture of his title. Let us imagine the millions of acres of Government lands yet to be surveyed and disposed of in sections of six hundred and forty acres, and these divided into one hundred and sixty acre farms, and each having sixteen acres of woodland so disposed as to afford a shelter to the orchards and growing crops, and the whole system working its wonderful influence upon the streams, the climate, and everything that grows upon the earth.

While I look at this subject only in an agricultural point of view, there is another in which the nation should look upon it as extremely important—the annual consumption.

The dwellings of twenty millions of people here are chiefly made of wood; the out-buildings are almost entirely built of wood; the fencing, which costs actually more than all the buildings, is of wood; and all these are being continually consumed by time. Railroads consume timber immensely. It has been estimated that each day in the year trains run about three hundred and twenty thousand miles, consuming one and a half cords of wood for every twenty-five miles, making a daily consumption of nineteen thousand two hundred cords. Sixty thousand miles of road require two thousand five hundred ties to the mile; and assuming their life to be five years, an annual consumption of thirty millions of ties is required; and it may be safely said that the waste in getting out ties is one-third of the tree. Add to this the fencing of these roads, the half million of telegraph-poles which each year will be required, and the vast amount of destruction of forests by flood and fire, and we must be startled into the conviction that we must not only make an effort to stay the hand of ruthless destruction, but we must make an effort to restore that which has already been destroyed. Where land sold by the Government has no timber upon it, I would not only abate the purchase-money to induce planting timber, but I would exonerate the land from the payment of taxes for a certain number of years. Doubtless, there is no State or Territory which would not gladly co-operate with the General Government in any measure which conduces to so much good.

Would the insertion of this proposed condition impede the sale or retard the settlement of the public lands? In other words, would it be objectionable in the view of the settler or purchaser? It can scarcely be supposed that any one inclined to make a home in a new country would fail to foresee the immense advantages that would accrue to an entire community of farmers by the protection which would be afforded to

their orchards, crops, and buildings, especially if they be assured by the law which controls the titles of all that it is a fixed principle, by which all must be governed. Apart from the considerations of interest involved in these suggestions, how much would such a state of things add to the beauty and character of a State? The idea that one-tenth of its lands was covered with growing and thriving timber, producing every year an amount equal to all the wants of its owners, and yet not diminishing in area, would give an eclat to a whole State in which such a system prevailed, and add immensely to the value of its estates. Lands thus kept in timber are not lost to the productive industry of the country, for, if properly cared for, there are certain grasses which grow profusely in the woods, and afford an amount and quality of pasturage which would be quite as profitable as any other part of the farm. In every point of view in which this subject may be looked at, it presents the strongest reasons why this most vital interest of the country should be guarded through the instrumentality of the power of Congress when disposing of the public lands. It should be a stipulated condition of all grants that ten per cent. of the land granted should be kept in timber.

There is one other subject, which pertains to the disposition of the public lands, to which attention should be attracted. By the act of Congress of July 2, 1862, there was donated to the States about ten millions of acres of the public lands, and the principle of distribution was to each State in proportion to its representation in Congress—30,000 acres for each Senator and Representative—whereby Minnesota was entitled to 120,000 acres, whereas New York was entitled to 990,000 acres, the latter having an area of about thirty-two millions of acres, while that of Minnesota is about fifty millions. This basis of *pro rata* works such manifest injustice, whatever may be the object of the grant, that it should never again be allowed to control that just equality which is always sought to characterize the action of the Government. Its injustice is made the more manifest by the consideration of the facts that in 1850 the cultivated area of Minnesota did not exceed two thousand acres, whereas in 1868 it was about one million three hundred and eighty thousand acres; and what was unjust in 1862, when the law was passed, has already become more than doubly so in 1872, because of its increased and continually increasing population. This comparison is used as an illustration of what is equally true of all the Western States and Territories.

It is not an easy subject to say what would be a proper basis of *pro rata* division, such as would reconcile itself to our sense of justice. Area of territory naturally suggests itself. But this, too, would manifestly work inequality and injustice, for many reasons which readily present themselves. All legislation is for the common benefit. It is to do the greatest good to the greatest number, and not to the greatest part. And while the time may come when Minnesota may equal or double the population of New York, that time is yet very distant, and time is an element which should occupy a prominent place in any investigation of such a subject. Again, in some of our States and Territories there are large areas which are not susceptible of either population or cultivation to any great extent. In such cases, to measure a division upon such a basis, would be without the sanction of any principle of right. It is much easier to tear down than to build any structure; but naturally striving to give to each of these conflicting elements their due weight, a compromise between them suggests itself. In the councils of the nation territory is comparatively silent and weak, while population is loud and

strong, but apparently ever ready to enact laws according to equity and justice. I suggest that both these principles of territory and population shall be invoked in the solution of this question, and that when our lands are to be divided between the States *pro rata*, the basis of it shall be both population and territory; that one-half shall be *pro rata* according to population or representation, and the other half according to area of territory. This may not, in all possible cases, produce exact justice and right, but it will approximate it as nearly as human law can attain any object.

FARM RECORDS.

Few systematic records of yield and value of farm crops, or of the results of peculiar culture or variable seasons, have been published in this country. Mr. John N. Nelson, of Newark, Rock County, Wisconsin, has communicated certain results of his farm-work for twenty-two years, showing the product and price of corn and wheat, beef and pork, for that period.

Wheat produced and sold in twenty-two years.

Year.	Acres.	Bushels.	Value realized.	Remarks.
1850.....	25	359	\$286 25	Kind, Hedge-row; beardy and good.
1851.....	28	128	79 25	Kind, Hedge-row; badly blighted; wet summer.
1852.....	12	169	90 38	Kind, Canada Club; good.
1853.....	10	57	29 68	Kind, Canada Club; partly destroyed by chinch-bug.
1854.....	12	36	29 20	Kind, Canada Club; destroyed by chinch-bug.
1855.....	24	215	224 00	Kind, Canada Club; good; bugs again.
1856.....	50	589	504 30	Kind, Canada Club; good, but light crop.
1857.....	25	39	39 00	Kind, Canada Club; destroyed by chinch-bug.
1858.....	44	965	610 50	Kind, Canada Club and Rio Grande; good.
1859.....	20	183	189 24	Blighted badly; wet summer.
1860.....	50	989	788 00	Kind, Rio Grande; good.
1861.....	35	663	474 33	Kind, Fife and Rio Grande; good.
1862.....	40	793	531 10	Do.
1863.....	25	105	81 10	Kind, Fife and Rio Grande; destroyed by bugs.
1864.....	30	282	339 00	Kind, Fife and Club; damaged by bugs.
1865.....	29	-----	-----	Bugs took all the crop.
1866.....	35	234	284 40	Kind, Fife and Rio Grande; badly damaged by bugs.
1867.....	30	179	395 75	Kind, Fife and Rio Grande; blighted.
1868.....	30	506	844 86	Kind, Fife and Rio Grande; good.
1869.....	28	-----	-----	Bugs took all the crop.
1870.....	25	248	313 50	Kind, Sangapore or Mammoth; good.
1871.....	20	184	202 40	Kind, Sangapore; dry season; quality good.
	627	6,923	6,336 24	Total amount sold.
		880	812 00	Amount used in family.
		1,096	1,040 20	Amount used for seed.
Total.....		8,899	8,188 44	

Corn sold in twenty-two years.

Year.	Acres.	Bushels.	Value.	Remarks.
1850.....	26	8	\$2 60	Kind, Hackberry and Dent.
1851.....	25	90	30 00	Kind, Hackberry and Dent; good.
1852.....	30	27	6 50	Do.
1853.....	15	103	44 40	Do.
1854.....	25	432	178 10	Do.
1855.....	27	449	208 90	Do.
1856.....	30	606	286 00	Do.
1857.....	37	1,300	568 50	Do.
1858.....	35	590	157 70	Light crop; dry season.
1859.....	40	1,000	744 00	Extra good.
1860.....	40	475	132 20	Good.
1861.....	30	250	165 50	Part destroyed by chinch-bugs.
1862.....	40	2,371	1,986 10	Good.
1863.....	35	851	371 37	Do.
1864.....	60	1,448	1,538 90	Damaged by chinch-bugs.
1865.....	37	516	258 11	Good.
1866.....	40	715	321 34	Do.
1867.....	30	229	160 00	Do.
1868.....	40	614	496 00	Do.
1869.....	45	949	611 25	Do.
1870.....	50	830	548 00	Dry season; crop light; quality good.
1871.....	48	791	407 31	Dry season; quality good.
Total ..	779	14,644	9,222 78	Total amount sold.
		1,200	480 00	Amount on hand and present value of, at 40 cts. per bushel.
		15,844	9,702 78	

Beef sold.

Year.	Pounds.	Value.	Remarks.
1850.....	6,000	\$315 00	Fed corn on cob.
1851.....	4,046	300 10	Do.
1852.....	6,000	250 00	Fed 386 bushels corn-meal.
1853.....	1,000	40 00	Fed corn-meal.
1854.....	2,000	140 00	Fed cob and corn, ground.
1855.....	3,600	261 00	Do.
1856.....			
1857.....			
1858.....			
1859.....	1,860	163 00	Fed cob and corn, ground.
1860.....	1,200	60 00	Do.
1861.....	615	40 00	Do.
1862.....	1,500	81 00	Fed corn-meal.
1863.....			
1864.....	138	10 67	Do.
1865.....	1,200	90 00	Fed cob and corn, ground.
1866.....	1,800	119 32	Do.
1867.....	1,700	130 00	Do.
1868.....	246	13 75	
1869.....			
1870.....			All the cattle sold alive on the scales, except three or four.
1871.....	2,010	85 25	Do.
Total.....	34,915	2,099 09	Had single quarters dressed.

Of the fat cattle, Mr. Nelson says: "I sold 56 head of fat cattle altogether. In 1852 I ground the corn and fed 386 bushels of meal to 10 head, about 38 bushels each; and I think that would prove a correct basis for averaging the remainder. These 56 head cost \$657 12, or \$11 77⁶/₁₀ each; sold for \$2,099 09; average, \$37 48. Cattle mostly two years old, bought in the fall and sold in the spring following."

Pork sold.

Year.	Pounds.	Value.	Remarks.
1850.....	1,161	\$45 00	Fed corn exclusively.
1851.....			
1852.....	3,760	222 00	Fed corn exclusively.
1853.....	2,713	95 81	Do.
1854.....	3,497	165 85	Do.
1855.....			
1856.....			
1857.....	505	27 77	Do.
1858.....			
1859.....	2,011	86 86	Do.
1860.....	1,075	33 81	Do.
1861.....	3,959	171 80	Do.
1862.....	921	88 00	Do.
1863.....	1,000	124 80	Do.
1864.....	1,279	86 51	Part meal and cooked.
1865.....	3,616	183 00	Do.
1866.....	1,736	188 00	Do.
1867.....	2,985	285 24	Do.
1868.....	2,720	235 00	Do.
1869.....	6,523	214 40	Part meal and pumpkins, cooked.
	39,556	2,253 85	Pork averaged 5 cents per pound.
	13,200	660 00	Used in family in twenty-two years.
	52,756	2,913 85	
		300 00	Value of hogs on hand.
Total.....		3,213 85	

Wheat account condensed.

Cost of plowing, sowing, dragging, and rolling 627 acres, at \$2 per acre...	\$1,254 00
1,096 bushels seed-wheat, at 95 cents per bushel	1,041 20
Cutting, binding, setting up, drawing, stacking, thrashing, and boarding, \$2 89 per acre	1,812 03
Rent of land, at \$2 50 per acre	1,567 50
Cost, (\$9 05 per acre).....	5,674 73

Receipts from wheat.

6,923 bushels sold; average (about) 92 cents per bushel	\$6,336 24
880 bushels used in family, at 92 cents per bushel	809 60
Total receipts.....	7,145 84
Cost	5,674 73
Profit, (\$2 34 per acre).....	1,471 11

Corn account condensed.

Cost of plowing, dragging, rolling, and planting 779 acres, at \$2 per acre..	\$1,558 00
Cultivating and harvesting, at about \$3 73 per acre	2,912 19
100 bushels of seed sown	100 00
Rent of land, at about \$2 50 per acre	1,947 50
Cost, (per acre, about \$8 36).....	6,517 69

Receipts from corn.

2,200 bushels fed to horses in twenty-two years, at 61 cents per bushel	\$1,342 00
100 bushels fed to sheep, in 1867 and 1868	61 00
880 bushels fed to cows and young stock in twenty-two years	536 80
Difference in value of cattle, between buying and selling	1,441 99
15,844 bushels sold and on hand	9,702 78
52,756 pounds of pork sold and used in family	2,913 85
40 hogs on hand, valued at	300 00
2,083 dozen eggs, \$224 95; 625 chickens, \$145 47	370 42
	16,668 84
Profit, (about \$13 03 per acre).....	10,151 15

These records make the average yield of wheat for the period of twenty-two years, 14.15 bushels per acre; the receipts, exclusive of seed, \$11 39 per acre; cost of cultivation, \$9 05; and net profit per acre, \$2 34. The losses from insects are heavy, partial in seven seasons, and total in the years 1865 and 1869. In 1855 the yield was 9 bushels per acre; in 1854, when insects were peculiarly destructive, it was only 3 bushels; and in 1857, little more than 1½ bushels. In five seasons of the twenty-two reported, the average yield was less than 5 bushels. The result is not indicative of much profit in wheat-growing. It is evident that the avoidance of one-half of the losses by chinch-bugs would have doubled the profit actually obtained.

The record is imperfect, in failing to give the quantity of corn fed to hogs, in addition to 15,844 bushels sold, 2,200 fed to horses, 880 to cows, and 100 to sheep, and also in including the profits of feeding, for beef or pork, in the net profits of corn culture. This method of statement makes the gross receipts for corn \$21 39 per acre; cost of culture, \$8 36; net profit, \$13 03 per acre, which is \$1 64 per acre more than the gross product per acre of wheat. Mr. Nelson thus finds that, if the 627 acres of wheat had been planted in corn, with similar results, yielding a net return of \$13 03, instead of \$2 34, the difference in his favor would have been \$6,702 63.

A PENNSYLVANIA FARM.—Mr. Johnson Miller, of Warwick, statistical correspondent of this Department for Lancaster County, Pennsylvania, at a late meeting of the Agricultural and Horticultural Society, read an instructive essay upon farm accounts, from which the following statistics are taken, as representing the operations of a farm of 100 acres, belonging to his father:

Years.	INCOME OF GRAIN SOLD IN SIX YEARS.					INCOME AND EXPENSES OF LIVE STOCK.		
	Wheat.	Corn.	Oats.	Rye.	Total.	Income.	Expenses.	Balance.
1864.....	\$964 80	\$542 62	\$214 30	\$34 50	\$1,756 22	\$874 60	\$525 00	\$349 60
1865.....	314 44	337 25	111 50	11 44	774 63	877 35	495 00	382 35
1866.....	232 80	524 60	255 21	21 75	1,034 36	755 20	525 50	229 70
1867.....	1,244 89	435 79	196 12	24 29	1,901 09	970 18	823 22	146 96
1868.....	478 20	309 29	99 27	19 56	906 32	942 70	460 79	481 91
1869.....	517 47	659 59	164 50	16 10	1,357 66			
Total.....	3,752 60	2,809 14	1,040 90	127 64	7,730 23	4,420 03	2,829 51	1,590 52

Years.	MISCELLANEOUS INCOME.				ANNUAL EXPENDITURES.		
	Butter and eggs.	Hay.	Pasture.	Miscellaneous.	Farm-ing.	House-hold.	Farm-hands.
1864.....	\$217 71	\$50 00	\$28 50	\$256 78	\$381 97	\$392 85	\$241 03
1865.....	237 77	53 00	18 75	78 22	638 06	203 65	222 99
1866.....	211 14	104 74	17 00	37 50	600 99	434 79	227 51
1867.....	209 34	66 60	10 68	116 20	863 03	396 54	313 52
1868.....	236 71	47 22	9 00	7 73	314 95	657 69	267 52
1869.....	217 03	68 00		91 54	353 78	447 13	309 07
Total.....	1,329 60	390 26	83 93	587 97	3,157 77	2,532 65	1,591 64

The annual crops for twenty years were as follows:

Years.	Wheat.	Corn.	Oats.	Rye.	Total.	Years.	Wheat.	Corn.	Oats.	Rye.	Total.
	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>		<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>
1850.....	446	990	402	47	1,885	1861....	483	875	743	30	2,131
1851.....	652	485	700	21	1,858	1862....	610	900	567	25	2,102
1852.....	342	1,100	591	11	1,944	1863....	433	1,260	482	20	2,245
1853.....	423	1,000	310	24	1,757	1864....	432	945	743	24	2,144
1854.....	526	975	690	86	2,277	1865....	274	1,100	509	20	1,903
1855.....	432	1,240	710	40	2,472	1866....	301	1,325	585	24	2,232
1856.....	560	704	495	42	1,801	1867....	432	1,200	579	16	2,227
1857.....	663	875	677	55	2,270	1868....	312	1,075	450	14	1,851
1858.....	732	725	433	25	1,915	1869....	747	900	654	28	2,329
1859.....	785	680	574	30	2,069						
1860.....	570	722	703	25	2,020	Total.	10,255	19,076	11,597	607	41,535

The above statement shows the total number of bushels of grain raised in the last twenty years on this model farm—10,225 bushels wheat; 19,076 bushels corn; 11,597 bushels oats; and 607 bushels rye; making a total of 41,535 bushels of grain, or an average of 2,077 bushels per year; or, by taking the average of each crop, we have 513 bushels of wheat, 954 bushels of corn, 580 bushels of oats, and 30 bushels of rye per annum.

The income from cereals during six years was \$7,730 28; from live stock, \$1,590 52; from butter, eggs, hay, pasture, &c., \$2,391 76; total income, \$11,712 26. The expenses during the same time were, farming expenses, \$3,157 77; household expenses, \$2,532 65; farm-hands, \$1,590 52; taxes, \$944 33; total expenses, \$8,216 99. The net income was \$2,495 57, averaging \$415 93 per annum, in addition to the products consumed by the family.

NOTES OF THE GARDEN.

BY WILLIAM SAUNDERS, SUPERINTENDENT.

GROWING THE TEA-PLANT FROM SEEDS.—Inquiries having reached the Department concerning the best mode of raising plants of the Chinese tea from seeds, it is recommended to sow them in boxes filled with light soil, covering the seeds with a depth of half an inch of the same. A sash-covered frame will afford the most favorable conditions of growth; but where this convenience is not available, the boxes may be placed in a sheltered and somewhat shaded position, in the open air, and the soil maintained in a damp although not wet state. After one year's growth they may be transplanted to permanent locations.

LICORICE-ROOT CULTIVATION.—Hon. William D. Kelley, of the House of Representatives, has referred to the Department a statement of Messrs. Mellor & Rittenhouse, of Philadelphia, concerning the manufacture of licorice, the extent of its consumption in the United States, and the practicability of cultivating the root in this country.

The larger proportion of licorice-extracts consumed in the United States is by the manufacturers of chewing-tobacco, it being considered indispensable in "plugs" or "limps." In medicine it is largely used as an expectorant. The following figures of the Bureau of Statistics show

the quantity and value of licorice-extract imported during the last five years:

Year.	Quantity.	Value.
1867.....pounds..	3, 695, 976	\$450, 910 29
1868.....do.....	3, 865, 257	469, 045 75
1869.....do.....	2, 936, 999	379, 012 80
1870.....do.....	2, 759, 668	351, 851 00
1871.....do.....	2, 665, 536	310, 901 00

In England an acre of the cultivated root is said, by the firm referred to, to command £100. The root is also imported by the United States from Spain, Italy, Sicily, France, and Russia, but chiefly from the two first named.

Entertaining the opinion, after some investigation, that the root can be successfully cultivated in several of the Southern and Western States, Messrs. Mellor & Rittenhouse consider that a new industry may be fostered, relieving us of the necessity of importing a valuable and indispensable product. The root is worth from five to ten cents per pound, according to quality, and three pounds will yield one pound of the extract. In addition to the yield of extract, the crushed and powdered root is applied to various minor uses. Messrs. Mellor & Rittenhouse attribute the decreasing importations in the statement above made from the Bureau of Statistics, to the high tax on plug-tobacco, in which the extract is used, and a discrimination in favor of fine-cut chewing, the tax on which is about one-half that on plug-tobacco.

The following considerations upon the subject of introducing the culture of the root into this country were submitted by the Commissioner:

I am not aware that this root has ever been a successful culture here—not by any means on account of uncongenial climates. As far as climate is concerned, it can be produced from New Jersey south and westward; but, like many other products equally well suited to our climates, such as tea, madder, opium, indigo, &c., &c., its profitable culture depends upon the price of labor. This does not apply, perhaps, in the same degree either to licorice, madder, or indigo, as it does to tea and opium, because more of what may be classed as unskilled labor is needed for the two last-named products.

Practically, the soil to produce good licorice-roots must be rich, and, above all, deeply worked—say from eighteen inches to two feet—of a light, loosened, rich soil, a preparation that is best attained by hand-labor. Then, again, the crop takes from three to four years to perfect, so that the estimate of its value at £100 per acre, (which, by the way, is a very high estimate,) has to be divided by 4 to give the yearly value of an acre of the root. I do not suppose that farmers would consider it a profitable crop unless they received double the amount per pound for it that it is now imported for. The same species of labor expended upon vegetable-growing realizes ten times the value of product, so that there is but little to encourage the farmer to enter this branch of culture. There are at least \$50,000,000 in gold that yearly go to other countries for products that can be produced here in equal perfection, as far as climate and soil are concerned, but we cannot compete with their cheap labor.

CINCHONA.—In the year 1870 the American Medical Association memorialized Congress on the importance of introducing the cultivation of the cinchona tree into the United States. The memorial sets forth at some length the value of cinchona and its preparations to the health of mankind, especially referring to its use in the treatment of a class of diseases peculiar to tropical and miasmatic localities. The memorial states that the tree may be transplanted, and, under the proper conditions of cultivation, will furnish a bark equally efficient with that brought from South America. It is urged that only two questions remain to be considered: 1st. Is not the supply so near at hand as South America

inexhaustible? 2d. Have we within the limits of our own country the proper climatic and other conditions to grow the tree with success? With regard to the first, the reckless destruction of the trees is shown, and the fact that the supplies from South America are not nearly sufficient to meet the demand, the price being kept so high as to place this inestimable remedy beyond the means of millions of natives of fever-visited regions. In reply to the second question, facts are cited to show that the cinchona may be propagated with success in California, in which State localities may be found where it may be grown as readily as in India, where its cultivation has been attended with success. The association recommends the appointment by Congress of a committee of scientific men to investigate the practicability of cinchona cultivation in the United States, with authority to visit South American countries, and to negotiate for and obtain a proper quantity of seeds and plants.

A copy of the memorial having been referred to the Department by Dr. L. J. Deal, of Philadelphia, chairman of the memorial committee, for the purpose of ascertaining its opinions upon the general subject, the Commissioner expressed the following views:

From the records of this Department, I learn that efforts to procure plants of the best species of the cinchona were made several years ago, and at the present time there are several hundred plants fit for transplanting, as soon as a suitable site can be ascertained, and a suitable and responsible person found who will give the plants a fair trial, this being the mode by which the Department introduces new seeds and plants.

The request of the American Medical Association, that Congress appoint a commission of scientific men to proceed to South America for the purpose of determining the best species for transplanting, seems to me altogether unnecessary, since such determination has already been fully made by other nations, whose deductions cannot, I presume, be questioned, as the best botanists and chemists have been consulted, and their conclusions published to the world. With reference to procuring plants from the native woods, it would be a very precarious and doubtful method, in view of the fact that young plants, as well as seeds, can now be procured through ordinary commercial channels; at a comparatively trifling cost, and in such quantities as may be desired.

It seems to me that the only question to be determined, is that of a proper locality for the test of growth; and, in this connection, it occurs to me that the kind offer of the Sacramento Medical Society to endeavor to find a proper habitat for the cinchona tree, offers the most practicable mode of securing such test. The locality being found, we furnish the plants for the test.

It strikes me forcibly that it is a mistake to suppose that the cinchona will find proper condition of climate immediately below the *sequoia*. The requirements of these two genera are too widely different to warrant this conclusion. The *sequoia* endures a zero cold, while the cinchona, under similar conditions of treatment, is injured when the thermometer descends to 32°, or freezing-point. Neither is it an absolute necessity that a mountainous region should be selected; the great point is one of freedom, entire freedom from frost; cultivation will modify other peculiarities necessary to success.

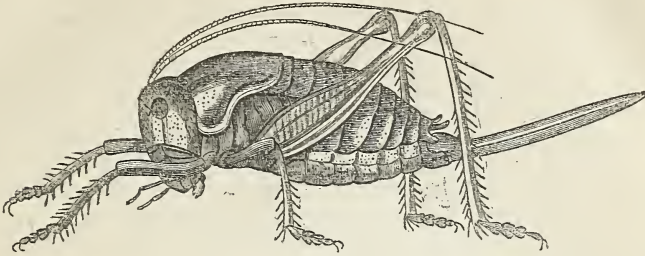
ENTOMOLOGICAL RECORD.

BY TOWNEND GLOVER, ENTOMOLOGIST.

THE WINGLESS GRASSHOPPER, OR "CRICKET," OF UTAH.—In common with the grasshoppers which are so numerous and destructive in the Western States, there is another orthopterous insect which swarms in untold numbers in Southern Idaho and Utah, and is known by the common name of "cricket." This is the *Anabrus simplex* of Haldemann, (Fig. 4,) and is mentioned in Stansbury's Great Salt Lake Expedition. Rev. Cyrus Thomas, who has studied the habits of this insect in Utah, states that it is found on the ground in immense swarms, and that in

at least two instances he has seen armies of them, at least two hundred to three hundred yards in width, packed closely together, moving across

Fig 4.



the road, apparently in search of water, as there was a creek a short distance in the direction in which they were going. The vegetation of the neighborhood was coarse grass, but Mr. Thomas states that he could not say positively as to their eating it or damaging the vegetation to any considerable extent, although it is highly probable that they do, as they appear to be almost omnivorous, collecting in great numbers on the dung dropped by horses, and feeding upon it. In several instances they were observed catching and eating the *Cicadas*, which were also in immense numbers on the bushes. The eggs are laid in the open plains, and in the act of deposition, the ovipositor of the female is placed in an almost perpendicular position, being inserted into the earth nearly its whole length.

Mr. James McKnight, who lives in Salt Lake City, states that when the Mormons first emigrated to Utah this cricket appeared in immense swarms, destroying their whole crops of wheat, &c., and that the second year they also appeared, but providentially, or miraculously, as it was deemed by the Mormons, vast flocks of white gulls suddenly appeared and destroyed the crickets to such an extent as to almost eradicate them for the time being, thus saving the remainder of the crop, upon which alone the half-starved Mormons had to rely for food for the next season. Since that time, these birds are held almost sacred in Utah. This so-called cricket, *Anabrus simplex*, can readily be distinguished from another brown cricket-like insect which also inhabits Utah, *Udeopsylla robusta*, which differs from the first-mentioned by being of a mahogany color, and by having sharp spines on the under side of the posterior thighs. It is never so numerous, but being found in the same section of country, these different insects have been frequently confounded by the common people. These "crickets" are eaten by the native Indians, generally roasted and pounded into a coarse-grained meal, a sample of which, from Camp Harney, Oregon, is on exhibition in the museum of the Department, known as "pulverized crickets," among which the heads and legs of *Anabrus simplex* are very abundant.

In an agricultural journal a notice appears that "a machine has been invented at Salt Lake City to kill grasshoppers, the great pest of that region, and consists of a frame drawn by two horses, having an apron projecting forward close to the ground to scrape up the locusts, with a hood above it, forming a box, open in front. At the rear of the machine is a pair of rollers geared together, the upper one driven by the carrying-wheels, of which it forms the axle. Whatever finds its way into the front of the machine is passed between these rollers and effectually

destroyed." Such a machine might be of utility where the injury done by grasshoppers would warrant the expenditure necessary to make it, but in order to be of much use, it should be constructed so that the insects once swept into the mouth of the machine could not escape again. This might be accomplished by making the opening in front of double cloth, the inner net or bag being much shallower than the outer one, and ending in a small opening into the main bag like a fish-fyke. The insects should then be forced to pass between the rollers by means of something like a revolving scraper, or they would be very apt to clog up in the hinder end of the machine, and not pass between the rollers at all. For the flying grasshoppers, such as *Caloptenus spretus*, &c., mentioned in our January report, it might be advisable to use the machine when they are yet in the larva or pupa state, and before they acquire wings, by means of which they would be able to escape being swept into the mouth of the machine.

CHEMICAL MEMORANDA.

BY R. T. BROWN, CHEMIST.

An interesting discussion is in progress among the chemists of continental Europe, on the true character of that substance which forms the frame-work of plants, generally known as *woody fiber*. Chemists have heretofore considered this as a single proximate element, but the researches of Dietrich and König have pretty clearly established the complex character of this substance. There is first the true frame-work, or vegetable fiber, consisting, substantially, of organized starch. To this substance the term *cellulose* has been appropriated. Covering this true skeleton is found a second substance, much denser than the cellulose, and containing the chief part of the mineral matter remaining as ash after the plant is burned. This is called *lignin*. These terms have been heretofore applied indiscriminately to woody fiber.

The point of interest in the discussion lies in the fact that cellulose is largely digestible, while lignin is almost indigestible. Dr. Märcker, at Weende, has conducted a series of instructive experiments on the digestion of hay by sheep. Of the crude fiber of meadow hay he found that about 60 per cent. was digested, and the 40 per cent. which remained in the excrement consisted chiefly of the lignin, containing a large proportion of the mineral elements of the food. Of the albuminous portion of the hay, but 55 per cent. was digested, while the non-nitrogenized substance, such as sugar, gum, &c., proved more digestible, 68 per cent. having disappeared. When the experiment was repeated with hay of the second cutting, in which the woody fiber had not fully matured, it was found that 68 per cent. of the crude fiber was digested. Professor E. Wolff has made similar experiments with red clover hay, with results almost identical. He ascertained, however, in another experiment, that clover which was cut before it had blossomed was about one-sixth more digestible than that which had passed the bloom before it was cut. From these experiments it is fairly to be inferred that the increased weight which grass acquires in ripening is from the increase of indigestible lignin, and not from digestible cellulose. Meadow grass or clover cut at or before blooming is worth 16 per cent. more than an equal weight cut after it has matured. The nutriment in the seed of timothy

hay is an unknown quantity in these experiments, and will change the results somewhat.

ORANGE CULTURE.—Mr. J. H. Gates, of Pilatka, Florida, inquires what manures are best adapted to the rapid growth of his orange grove. The following points were submitted in answer:

The orange belongs to a class of plants the ashes of which are rich in alkalies and alkaline earths. This indicates a demand for potash, lime, &c., in the soil. If the ground was originally pine forest, it will be improved by the liberal use of wood-ashes, soap-boilers' refuse, or other manures rich in alkaline matter. If, however, the soil was hard-wood forest, and has not been exhausted by grain-cropping, it probably contains all the alkaline matter that the grove will demand.

If the subsoil rests on limestone it will be sufficiently rich in lime for the supply of the trees; but if it is a stiff, tenacious clay, it will require (after thorough underdraining) a good dressing of fresh slaked lime to render the clay friable and easily pulverized. Barn-yard manure, unless it is well composted or thoroughly rotted, is not well adapted to tree culture. Leaves, composted with three or four times their weight of swamp-muck, make the best tree manure we can command. If leaves are hard to obtain, the proportion of muck may be increased without material injury.

Guano, from the rich supply of phosphates which it furnishes, is better calculated to promote the growth of seeds in plants, than to develop wood; consequently it has never been a very popular tree manure. If the climate will permit the growth of some crop which, like clover, will act as a mulch at first, and afterward as a manure, it will greatly promote the growth of the grove.

WOOD ASHES.—In answer to several inquiries concerning the value of wood ashes as a manure, we reply that ashes from the wood of the hickory, sugar-maple, elm, &c., contain about 50 per cent. of potash compounds, consisting chiefly of combinations with carbonic acid and silica, while the ashes of pine wood will rarely yield more than 20 per cent. Ashes saved from clearings often contain earth mixed with them, in gathering the remains from fires. When wood is used for burning lime, the ashes are often put into the market largely mixed with that substance. Sifted coal-ashes are sometimes used to adulterate wood ashes, and the fraud can hardly be detected by the eye.

Leached ashes always retain a portion of potash, usually in combination with silica or phosphoric acid. These compounds are slowly soluble in water, and, therefore, are not removed in leaching, but they are valuable, especially to grain crops and grasses. Ashes, whether leached or unleached, should never be suffered to go to waste. Even coal ashes may be used to good advantage on stiff-clay soils. Their effect, however, is more mechanical than chemical.

BONES AND BONE-MEAL.—The complaint of fraud in the manufacture of commercial manures gives rise to many questions concerning the manufacture of bones into some available form by the farmer himself. This is a very important subject, and yet it is one beset by many difficulties. To a majority of farmers in this country bones are the only reliable source of supply to replace the phosphates carried away by the annual exportation of grain, beef, and pork. But bones broken into fragments of not more than an ounce in weight each will, under ordinary circumstances, remain in the soil undecomposed for half a century, and consequently but little benefit will be derived from their use. Bones,

to be of immediate value, must be ground fine; but this with "raw bones" is a very difficult process. Bones subjected to the action of high steam lose all their oil, and a large portion of the gelatine which so obstructs the grinding, and thus become brittle, and quite easily ground on a common mill. The same end can be reached more directly by burning the bones, the waste being merely the animal matter contained in them. The phosphate of lime is unaffected by either steaming or burning.

The mineral part of the bones, thus separated, will be found to consist substantially of 45 per cent. of phosphoric acid and 55 of lime. This compound is insoluble in pure water, and but very sparingly soluble in rain-water charged with carbonic acid. If we take this "bone phosphate" and add to it a little more than half its weight of sulphuric acid, (commercial oil of vitriol,) we will in a few days produce a new compound, in which the sulphuric acid has removed two-thirds of the lime from the bones, combining with it to form gypsum, supplying the place of the lime thus removed with water. This is a true soluble superphosphate. Its elements are—

Phosphoric acid	60.69
Lime (calcium)	23.93
Water	15.38
	100.00

This mass will be found very tenacious, and somewhat difficult to handle. To remedy this it should be mixed, in sufficient quantities to render it dry, with some good absorbent, such as dry swamp-muck reduced to a powder, or with ground charcoal, or even with road-dust. Lime or ashes should never be used for this purpose.

Several farmers can co-operate in the construction of a mill, and thus produce the bone-meal which they use at prime cost. From this they can make their own superphosphate, and use it either by itself or mixed with composted manure.

But bones may be reduced to a very fine state of division by the use of strong wood-ashes, and thus, presenting a large surface to the solvent action of water and carbonic acid in the soil, may be of great value in maintaining fertility. We suggest the following formula for using bones with ashes:

Ground bones	100 pounds.
Strong wood-ashes	400 pounds.
Soda saltpeter	70 pounds.
Epsom salts	10 pounds.

Dissolve the soda saltpeter and epsom salts in sufficient water to thoroughly moisten the ashes and bone-meal. Mix well, and let it stand ten days, stirring it daily. Use some absorbent, such as dry muck pulverized, to dry the mass and reduce it to powder.

German potash (150 pounds) may be substituted for the ashes, in whole or in part. This amount used on an acre will have a marked effect on the crop.

GERMAN POTASH.—Potash being so important an element of fertility in the soil, and in several varieties of the soil being the point where exhaustion first shows itself, many intelligent farmers are anxious to know more about the probable sources of supply from which their fields in future are to be furnished with this indispensable element of nearly

all their crops. If an acre of ground yield 25 bushels of wheat, the crop will remove, in the straw and grain, 24 pounds of potash; or if the crop be corn, at 50 bushels per acre, each acre will be taxed to furnish about 75 pounds of potash. It is true that a large amount of this is returned to the soil, if the straw and stalks be not wasted; yet there is a large expenditure in the grain which is put into the market, and which is an entire loss to the soil. A few years ago nearly all the potash of commerce was obtained from wood-ashes by the process of leaching. The large demand for the article in various manufactures, and the failing supply of wood-ashes, induced various efforts to manufacture potash salts from feldspar and from sea-water. These efforts would probably have been successful but for the discovery of immense deposits of chloride of potassium associated with the mines of rock-salt at Stassfurt, in Prussia. The saline deposit is nearly 700 feet thick, (200 meters;) 500 feet of the lower portion of which being nearly pure rock-salt, (chloride of sodium,) while the upper member consists of a mixture of the sulphate of magnesia, chloride of sodium, and the double chloride of magnesium and potassium, the last-named salt forming 55 per cent. of the compound. This upper, or potash member of the mine, is about 90 feet thick, and sufficient explorations have been made to warrant the conclusion that at least six millions of tons of chloride of potassium may be taken from it.

The potash is separated from the other salts at the mine, and is chiefly sold as "muriate of potash," which is nearly a pure potassic chloride. A considerable portion of it, however, is now converted into carbonate of potassa, by a process similar to that by which soda is produced from common salt, and the manufacture of caustic potash is also carried on at this place to a considerable extent. The amount of potash annually produced from the mines of Stassfurt is stated at about 30,000 tons, chiefly in the form of the "muriate," which is fast becoming a current article of commerce in all the market centers of Europe and America. The price at the mines is reported to range from \$30 to \$40 per ton, according to the degree of purity. At this price, allowing a fair margin for transportation and profit, Prussian potash can be advantageously used as a fertilizer in this country. But it certainly would not be advisable for an American farmer to look to Germany for potash to supply his crops, while he suffers ashes to go to waste on his farm, or in his neighborhood. The discovery of mineral potash at Stassfurt warrants the hope that the great alkaline plains, which form so large a part of the central plateau of this continent, will, at no distant day, furnish a similar supply.

SCIENTIFIC NOTES.

FOREIGN COMMENDATION OF THE REPORT OF THE AGRICULTURAL DEPARTMENT.—We find in "Nature" an appreciative notice of the annual and monthly reports of the United States Department of Agriculture. Much astonishment is expressed in the article at the unexampled magnitude of the editions of these works published; and inquiry is made as to why similar enterprises are not conducted by the government in Great Britain. Noticing, particularly, the fact that our Department of Agriculture has charge of everything connected in any way with the interest in question, and that it not only prosecutes inquiries, but publishes valuable and thoroughly digested reports on the different subjects, it calls

attention to the absurdity of the British practice of dividing the same duties among a number of distinct establishments. Thus the privy council has charge of science and art, the education of children, and the diseases of animals. Again, the copyhold, tithe and enclosure commission is state authority on drainage and cottages, as well as the national land-surveyor, valuer, and actuary. The statistical department of the Board of Trade is required to prepare, in addition to the report upon imports and exports, an account of the agricultural condition of the country from year to year. The local-government board, the local-act department and poor-law board, with a number of other departments, are more or less connected with the agricultural interest; while, upon the board of customs, agriculturists are dependent for the enumeration of agricultural imports and exports, and the nation looks to it for the collection of the revenue generally. The writer in "Nature" finds much to commend in the fact that all these numerous departments are concentrated in the one establishment in the United States. When it comes to the dissemination of information upon these various subjects, the reviewer considers Great Britain still further behindhand, as no special care is taken towards this object. The Royal Agricultural Society of England does as much as any private establishment conveniently can; but is unable, of course, to act on a very large scale. The article winds up by stating that the United States Department of Agriculture presents features which may be profitably copied by the British executive government and others, and which are equally instructive both to British agriculturists and men of science.

REMEDY FOR THE RAVAGES OF THE GRAPE-VINE SCOURGE.—The alarm created in France by the increasing ravages of the grape-vine louse, *Phylloxera vastatrix*, continues unabated, and grave fears are entertained and expressed in regard to the future of the wine-producing interests. Numerous remedies have been proposed; few if any of them, however, of much apparent value. Among those most relied upon have been, first, the collection and destruction by fire of the vine-leaves bearing the special galls of the *Phylloxera*; second, tearing up the diseased plants by the roots; third, the employment of various poisonous substances, among which those most in favor are carbolic acid, certain essential oils, and bisulphide of calcium; fourth, the reconstruction of the vineyard by grafting the vine with the American *Vitis labrusca*.

There is one difficulty in regard to the first remedy. The galls, which are abundant in America and about Bordeaux, do not exist in the vineyards of the south of France. There the insect is born, lives, multiplies, and dies, exclusively upon the roots of the vine. The second method is also of little account, since a vine may be seriously affected without showing any external symptoms; these manifesting themselves simultaneously over the entire vineyard, and involving the destruction of the whole. The use of poisonous substances, also, has given few results of any value, especially as it is only the superficial rootlets that can be reached, while the more deeply seated cannot be influenced. The fourth method, of grafting on the American grape, is one the success of which is problematical, and although, so far, there seems to be a greater power of resistance in this species than in others, there is no telling how soon this variety may cease to possess comparative immunity.

In view of all these circumstances M. Faucon has recommended very urgently the propriety of so planting the vineyards as to permit them to be inundated during the winter season, just as is done in the

case of cranberry-patches. He has tried this experiment on a very large scale during the past winter of 1870-'71, and has found the most gratifying result. Plants which had been seriously attacked, and which were on the point of being torn up and burned, were found in the ensuing spring to have recovered their vigor, and a careful examination failed to reveal the slightest traces of the destructive enemy. This application can only be made, however, to vineyards having a level surface and suitably arranged for the purpose. But M. Faucon is of the opinion that only such vineyards as can be treated in this manner can be maintained, and that all which are situated on the slopes of hills must be given up, unless some special arrangements can be made for the purpose of overflowing the roots of the vines.

THE SPECTROSCOPE, IN TESTING THE PURITY OF WINES.—Among those who have made a practical application of the spectroscope to various purposes in domestic economy and the arts, is Mr. J. C. Sorby, of England. He uses as a scale an interference spectrum with dark lines, by means of which the spectrum is divided into twelve optically equivalent sections. With this instrument he has lately investigated the coloring matters of Brazil-wood, and of logwood, in wine; first shaking the latter with ether, and then evaporating the ethereal solution obtained, treating the residuum with water, displacing this with carbonate of ammonia, and then testing the solution with the spectrum microscope. The question of a mixture of the coloring-matter of the ratany-root or of the poke-berry (*Phytolacca decandra*) is determined after the wine has been reduced to a smaller volume by evaporation, and the residuum treated with alcohol. The age of port, and other dark wines, may be determined by means of this apparatus.

IMPROVED MODE OF BREAD-MAKING.—*Les Mondes* gives an account, by Dr. Sezille, of an improved method of bread-making from entire wheat: This consists in first removing the husk of the grain by means of properly constructed machinery, and then acting upon it several times with tepid water, at about 176° F. for the first bath, and 104° for the second, by which the cover of resinous gum of the grain is dissolved and removed. This removal is necessary, on account of the fact that this substance becomes very deep brown—almost blackish-colored by the fermentation of the dough. The grain, during the treatment in question, absorbs from 65 to 70 per cent. of water, and is then reduced to a paste by means of machinery very similar to that used in chocolate-mills. This perfectly white paste is next leavened, and, after fermentation, is ready for baking. By this process, from the same quantity of grain which, by the usual method, furnishes 235 to 240 pounds of bread, the yield is increased to 320 pounds, of very superior quality, and far greater nutritive power. In addition to this, a very considerable saving of labor and expense is the result of the application of this new process, which has been thoroughly tested by competent and independent scientific, as well as practical, men.

CARBONIC ACID OF THE ATMOSPHERE.—A course of experiments upon the amount of carbonic acid in the atmosphere has been prosecuted at Rostock, for several years past, by Professor Schultz, who communicated the results of his inquiries at the last meeting of the Society of German Naturalists and Physicists. The percentage found by him appears to be much less than that hitherto indicated by most observers; the quantity detected amounting to only about 2.9 of the acid in 10,000 volumes of the air. Variations according to the time of day and year, noticed by

other observers, were not found in the Rostock experiments. On the other hand, however, meteorological phenomena appeared to exercise an undoubted influence. Thus, a snow-fall was frequently connected with a constantly increased percentage; while rain produced a precisely opposite effect. These influences are not constant; indeed, with snow there was sometimes found a less degree of acid, and with rain a greater. The direction of the wind, however, exercised a constantly appreciable influence. With atmospheric currents from the northeast, the carbonic acid was increased while with a southwest wind it was diminished. This fact led Professor Schultz to the impression that the sea was a constant absorbent of carbonic acid from the atmosphere, and that the average percentage was kept up by volcanic exhalations, animal respiration, processes of decomposition and combustion, and other causes developed on the land. Professor Schultz is now engaged in endeavoring to learn to what the absorptive power of sea-water is due, and has already ascertained that sea-water, when boiled, absorbs scarcely one-fourth part as much carbonic acid as sea-water which has lost its carbonic acid by the action of hydrogen.

EFFECT OF DRAINAGE AND SEWAGE ON MORTALITY IN CALCUTTA.—The extent to which disease depends upon drainage and sewage may be gathered from the report of the results of sanitary improvements in Calcutta. In that portion of the city inhabited by the native population, the cholera fatality for twenty years prior to 1861 averaged nearly 5,000 deaths per annum. In 1860, the deaths were 6,000 by cholera; and in 1866, nearly 7,000. About this time works of drainage and water supply were commenced, and have been gradually extended; and as a result, the use of foul tank and river water was discontinued; this benefit being conferred upon the city in the beginning of 1870. As the first result of this action, which is confined to a limited portion of the city, the mortality from cholera in 1870 was only 1,563, the general mortality also diminishing year by year with the extension of the works. The entire death-rate in 1870 was only 23 in 1,000—considerably less than half what it was in 1865.

PHOSPHATE BEDS ON THE DNIESTER.—The immense deposits of mineral phosphates in South Carolina bid fair to be matched by those lately discovered on the banks of the Dniester, in Eastern Europe. From a report of an investigation by Schwackhöfer, ordered by the Austrian government, we learn that these phosphatic concretions differ from those hitherto observed, in being almost entirely globular, with concentric radiated joints in their interior, and varying in diameter from half an inch to eight inches. When powdered and heated, in the dark, a bluish, phosphorescent light is observed. The region in which the phosphorite balls occur is characterized by the existence of silurian and cretaceous strata, all intermediate formations being wanting. The silurian strata are principally represented by limestone and clay slate, and the latter is either coarsely granulated and compact, or in smooth, lustrous sheets. It is in the latter alone that the phosphatic balls occur, and, indeed, only where this slate is immediately covered by the chalk-marl. From these considerations, it is inferred that the balls consisted originally of carbonate of lime, which have been transformed into phosphorite by the infiltration of phosphatic salts. The original material of these chalk concretions was doubtless supplied by the chalk-marl overlying the slate in a manner familiar to geologists, and it may fairly be presumed that the phosphoric acid of the mineral is simply the product of leaching out of the phosphatic slate above referred to, since all

the other constituents of the slate besides phosphoric acid are found in this mass. Herr Schwackhöfer imitated the mode of forming these balls by taking boys' marbles and keeping them for several days in a solution of phosphate of soda or of iron, and observed the transformation into phosphate of lime. An acid phosphate of lime is first produced, which is subsequently changed into the insoluble salt. In nature this process must have been a long time in progress, but the result was sure to be attained ultimately. As to quality, this phosphate promises to be of very decided value, showing a positive superiority over that of the Sombrero Islands. It occurs in immense masses, and, in fact, is apparently almost inexhaustible.

NEW STUFFING FOR CUSHIONS.—A material which has come quite extensively into use in Germany, as a substitute for hair, in the stuffing of saddles, &c., consists of a mixture of flax-seed and tallow. The advantage of this substitute consists primarily in the fact that the mobility of the seeds, one upon the other, prevents the packing or settling in any particular place, as often happens in saddles stuffed with hair, thus causing any given pressure to be readily and uniformly distributed over any given surface. The tallow serves the purpose, too, of keeping the leather flexible, and of preventing the absorption of perspiration, protects the article itself, and prevents the back of the animal from becoming galled. Animals with sores or galled spots on the back can be ridden with saddles stuffed with this material without any great inconvenience. The tallow also has the effect of preventing the rotting of the flax-seed, and is to be added in sufficient quantity to give the requisite softness to the entire mass. An aromatic odor can be imparted by introducing oil of turpentine, or camphor powder, and the durability considerably increased thereby. One part of tallow to from six to ten parts of flax-seed may be used, according to the temperature.

CULTIVATION OF ESPARTO GRASS.—Considerable attention is now being paid in Europe and Algiers to the cultivation of a fibrous plant, which is called *alfa* in Africa, *atocha* in Spain, but in commerce is usually known as the *esparto* grass, (*Macrochloa tenacissima*.) This plant thrives throughout the entire coast of the Mediterranean, both in Europe and in Africa, and its cultivation is extending very rapidly, in consequence of the demand for it as a material for paper-making. It grows in very sterile regions, even in the sands of the Sahara, and thrives under excessive heat and in a dry, arid soil. It is peculiarly valuable on account of its great tenacity and its resistance to fermentation, for which reason it is used for sail-ropes and the rigging of vessels. The demand for this substance may be estimated from the fact that it was first brought into notice in 1862, when a cargo was transported from Oran to England, and that the amount sent out has risen from 10,000 quintals in 1863 to 370,000 in 1870. The value of this export from the Province of Oran, in Algiers, alone amounted to \$1,500,000.

ABSORPTION OF NITROGEN BY PLANTS.—Dr. Cameron, in referring to certain experiments of Wagner, in which it was ascertained that maize grew and developed seeds in a solution in which kreatine was the only nitrogenous substance present, the kreatine being absorbed unchanged, remarks that, from his own experiments, he has found that plants can absorb unchanged, and apparently derive nitrogen from potassic nitrite, potassic cyanurate, and potassic ferro-cyanide.

EFFECT OF GERMINATION ON THE FAT IN SEEDS.—In a paper read before the Academy of Sciences, at Munich, by Dr. Vogel, upon the ir

fluence of the germination process on the fat contained in seeds, it is stated that this decreases in the ratio of from 0.094 to 0.320 per cent., or an average of 0.156 per cent.

VIENNA YEAST.—The good qualities of Vienna beer and bread are celebrated all over Germany, and are due to the excellence of the yeast used in preparing them. According to Dr. Vogel, the formula for preparing this substance is as follows: Previously malted barley, maize, and rye are ground up and mixed; next, put into water at a temperature of from 150° to 170° Fahrenheit; after a few hours, the saccharine liquid is decanted from the dregs, and the clear liquid brought into a state of fermentation by the aid of some yeast. The fermentation becomes very strong, and, by the force of the carbonic acid which is evolved, the yeast globules (the size of which averages from 10 to 12 millimeters) are carried to the surface of the liquid, and there form a thick scum, which is to be removed by a skimmer, placed on cloth filters, drained, washed with a little distilled water, and next pressed into any desired shape by means of hydraulic pressure, and covered with a strong and stoutly woven canvas. This kind of yeast keeps from eight to fourteen days, according to the season, and is, both for bakers and brewers, very superior to that ordinarily used.

FAT FOUND IN BEER YEAST.—In an article by Dr. Vogel, read before the Academy of Sciences, in Munich, after referring to the fact that all cereals contain a larger or smaller quantity of fatty matter, which is an essential constituent of the grain, the author describes at length his experiments made for the purpose of extracting, by means of ether, the fat contained in beer yeast, an oil boiling at about 200° Centigrade, specific gravity equal to 0.901; decomposed when heated above 300° Centigrade, and yielding acrolein. The quantity of this oil found in one liter of the yeast amounts to from 0.2 to 0.3 grams. It appears that this oil is in most respects similar to the fatty matter found in barley.

SEWERAGE SYSTEM IN MILAN.—The sewerage system adopted in Milan, is recommended by Mr. Child, of Oxford, as being suitable for small towns and country villages. Its essential feature is the drainage of the houses into water-tight cess-pools, which are emptied frequently, efficiently, and quite inoffensively, by means of a barrel-cart, previously exhausted of air, and a hose. The barrel-cart then conveys the sewage to a depot at a convenient distance, where all that is salable is sold to farmers, and the rest is manufactured into a kind of dry artificial guano. Many small towns and villages lie on dead flats or at the bottom of deep valleys, where ordinary sewerage works could not be established without an expensive provision for raising the sewage in order to render it available for irrigation. In such places the Milanese system might be carried out with ease, and at comparatively small outlay. A certain number of cess-pools must be rendered water-tight—a process not very expensive. One cess-pool would serve for several cottages, and frequent emptying would be better than large sizes of inclosures. Two barrel-carts must be procured, and these, with a small steam-engine at the depot to work the air-pump, would, together with about three men and two horses, form the whole of the apparatus required for testing the system on a small but sufficient scale. On the day on which Mr. Child visited the depot near Milan, farmers' carts were waiting there literally in scores, to obtain their supply of it; and he feels sure that, if landed proprietors or farmers were to give this system a trial in this country, they would find it worth adoption.

DISTINGUISHING EDIBLE MUSHROOMS.—A writer in the *English Mechanic* gives what he considers to be an invaluable rule for distinguishing the true mushrooms from the poisonous species. He remarks, in the first place, that the true mushroom is invariably found in rich, open pastures, and never on or about stumps or in woods; and, although a wholesome species sometimes occurs in the latter localities, the writer considers it best to avoid their products. A very good point, in the second place, is the peculiar intense purple-brown color of the spore-dust, from which the ripe mushroom derives this same color (almost black) in the gills. To see these spores, it is only necessary to remove the stem from the mushroom, and lay the upper portion, with the gills downward, on a sheet of writing-paper, when the spores will be deposited, in a dark, impalpable powder, in a short time. Several dangerous species, sometimes mistaken for the true, have the spore umber-brown, or pale umber-brown.

In the true mushroom, again, there is a distinct and perfect collar, quite encircling the stem, a little above the middle, and the edge of the cap overlaps the gills. In some poisonous species this collar is reduced to a mere fringe, and the overlapping margin is absent or reduced to a few white scales. Lastly, the gills never reach to nor touch the stem, there being a space all around the top of the stem, where the gills are free from the stalk.

There are numerous varieties of true mushrooms, all of them equally good for the table. Sometimes the top is white and soft like kid leather; at other times it is dark-brown and scaly. Sometimes, on being cut or broken, the mushroom changes color to yellow, or even blood-red; at other times, no change whatever takes place. To sum up, it is to be observed that the mushroom always grows in pastures; always has dark, purple-brown spores; always has a perfect encircling collar; and always has gills which do not touch the stem, and has a top with an overlapping edge.

In addition to the method just indicated for testing the genuineness of mushrooms, we are informed that, however much any particular fungus may resemble the eatable mushroom, none are genuine nor safe the skin of which cannot be easily removed. When taken by the thumb and finger at the overlapping edge, this skin will peel upward to the center, all around, leaving only a small portion of the center of the crown to be pared off by the knife.

INTRODUCTION OF USEFUL PALMS INTO FLORIDA.—A memorial has been presented to Congress by Mr. Louis Baker, praying that the necessary steps be taken to introduce into the Southern States certain palms yielding sugar and fruit. Many years ago, Dr. Perrine, of Florida, memorialized Congress, urging the importance of taking measures to initiate the cultivation of various tropical plants, of the success of which he felt assured by the results of his own experiments. The untimely death of the doctor, not long after, prevented any further action in this matter, though it is not unlikely that, had he lived, Florida and other Southern States would be enjoying a variety of important vegetable products not now included in their industrial resources. Mr. Baker thinks the palms especially important, particularly those furnishing sugar and oil in large quantities. He presents statements showing the ease with which such trees can be planted and kept up, and vast returns obtained with very little expenditure of labor. Other species of palm, considered by him important, are the date-palm, the cocoa-nut, the sago,

&c. He also urges the planting of indigo, ginger, gunny, safflower, the centennial hemp-plant of China, the camphor tree, &c.

CONVERSION OF CANE-SUGAR INTO GLUCOSE BY LIGHT.—The common impression that a solution of cane-sugar, kept at the ordinary temperature, and protected against the action of ferments, will preserve its taste and chemical proportion for an indefinite period of time, according to Riault, is a mistake; as he has observed in many cases that a solution of sugar-cane, without undergoing any ferment, will ultimately become altered, and be transformed more or less completely into grape-sugar. After considerable experiment, he has satisfied himself that this action is due to the influence of light, and that even when sugar-cane is found to be apparently adulterated with glucose, the inquiry should be instituted as to whether this was not the result of exposure to light rather than to intentional adulteration.

DELPRINO'S MODE OF TREATING SILK-WORMS.—The attention of visitors to the Italian section of the French Exposition of 1867 was attracted to certain small wooden pigeon-holes, each of which contained a silk-worm, where it was occupied in constructing its cocoon without disturbance from its neighbors. This was an invention of Dr. Delprino, of Vesime, in Piedmont, and which, although very simple in itself, formed an important innovation in the art of raising silk-worms. Since that time this and other peculiar inventions of the same gentleman have been widely adopted, and have done much toward protecting the silk interest from the losses which the recent multiplication of diseases and other casualties have brought about.

The difficulty in the ordinary magnaneries, or worm-houses, is that the worms are mixed together, the strong oppressing the weak, and also heaped upon each other in a mass, as to produce greater or less injury. In Delprino's system a life in common is interdicted as much as possible, although during the feeding of the worms it is impossible to isolate them entirely. During that period they are kept together, but allowed ample room for moving about—being placed on small movable hurdles which can easily be changed. This produces constant ventilation, and prevents the danger of a great agglomeration, in consequence of which the transformations marking the different ages involve much less loss. When they have attained the proper period for transformation to chrysalids, the worms are placed in what Delprino calls the cocoonry, the pigeon-holes (large enough to receive them) being placed vertically on each side on tables, in which the worm is able to move about with sufficient freedom, and yet suitably protected from any injury. It is believed that a saving of silk is thus secured, as there is no attachment of the cocoon to a branch, as in the ordinary method, involving a loss, according to the inventor of this new method, of twenty per cent.

Another of Dr. Delprino's methods consists in securing a perfect union of the two sexes, and a more certain fertilization of the eggs. This is done by placing the fly in a cell covered with a board and keeping it there in darkness and solitude for half an hour, at the expiration of which, to each male is given a female, and the board replaced until the nuptial operations have been accomplished. By another arrangement every female lays her eggs separately, so that those of two individuals are not mixed, and so that the imperfectly matured eggs (such as can easily be detected by examination) can be readily removed and destroyed, thereby improving the general quality of the grains. The general idea of Dr. Delprino's system consists in the isolation of the insects, and although this may require a special arrangement, and be

somewhat troublesome, yet it is maintained that the result sufficiently vindicates the propriety of the process, and that in the greater perfection of the eggs, and the improved health of the worms, and better quality and quantity of the silk, there is a decided superiority in the new system.

NEW PARASITE OF THE SPRUCE.—Much interest has been excited among botanists by the rapid development upon the black spruce and balsam firs of Northern New York of a parasitic plant belonging to the genus *Arcanthobium*, related to the mistletoe. In the vicinity of Warrensburgh about 75 per cent. of all the *Abies* were found to be infested, groups of forest trees forty feet in height being dead and bearing the peculiar marks of the infection. Dr. Gray remarks that what is curious about the discovery is, first, that it should not have been made before; and second, that it should, after all this overlooking, be found during the same season by two persons, in three different counties, and so abundant as to disfigure or even to destroy the trees it infests.

HUANO MANURE.—An important improvement in the manufacture of artificial guanos, the discovery of which affords for many cases a practical solution of the difficulty of disposing of sewage, has just been announced in Great Britain, having reference to a substance called Huano manure. This material, it is claimed, is as rich as Peruvian guano, and its manufacturers furnish a guarantee to that effect. It is worth, according to the scale of fertilizers, from \$40 to \$45 per ton, although its first cost, as manufactured, is less than \$13 per ton. In the course of inquiries leading to the invention in question, it was first ascertained that Portland cement transforms night-soil into stone, which, upon being crushed, gives 18 per cent. of phosphate of lime; and when applied as a manure for growing turnips, has produced 26 tons to the acre. Owing to the insoluble nature of the phosphates, however, the action was slow, and the next step in the process was to utilize this property of cementation in the superphosphate manufacture, in which night-soil is substituted for water in the decomposition of the phosphates. During this process the phosphates part with the two portions of their lime, uniting with sulphuric acid to form sulphate of lime, (plaster of Paris,) from which is derived the valuable property of cementing night-soil from a liquid into a solid mass. This solidification produces simultaneous deodorization, removing all offensive and foul effluvia, as well as any capability of giving out deleterious gases, and such powers of destruction are transformed into fertilizing endowments. It will thus be seen that cementation lawfully usurps the place hitherto occupied by fermentation and evaporation, and hydrates all the moisture—which, being chiefly urine, possesses manurial value to the last drop—together with the incorporation of the whole of the ammonia, alkaline salts, and other valuable constituents existing in the night-soil.

The inventor, Mr. Hughan, has made arrangements with an extensive manufacturer of superphosphates to carry on the process, and great expectations are expressed as to the value of the results to be anticipated. The advantages of working the new patent, in connection with such a manufacture, are: 1. The night-soil gives that pasty condition to phosphates essential to the reception and dilution of the acid employed in superphosphate manufacture. 2. The phosphates are increased one-fourth in quantity from the alkaline phosphates and phosphoric acid of the soil; thus, if 75 units of phosphate of lime are introduced, 100 are withdrawn. 3. The phosphates receive a new supply of nitrogen equal to from 2 to 4 per cent. of ammonia from the soil. 4. The phosphates obtain

5 to 8 per cent. of alkaline salts, containing 1 per cent. each of magnesia and potash, from the soil. 5. The phosphates receive, in addition, 16 per cent. of organic matter intermixed with the urea and uric acid, possessing the latent quality of evolving ammonia to the last atom, and inducing nitrification, as well as the ammonia and nitrates as returned in the analyses. On the other hand, night-soil receives from phosphates the following advantages: (a) Cementation; (b) solidification; (c) deodorization; (d) portability by rail or sea in the service of agriculture; (e) the bringing within the pale of sanitary laws, contributing to health and to municipal revenues. It is even suggested that the present superphosphate manufacture must ultimately pass over into night-soil utilization, either voluntarily or by legislative enactment.

FACTS FROM VARIOUS SOURCES.

FULTZ WHEAT.—In the monthly report of the Department for August and September, 1871, a statement of the history and valuable qualities of this wheat was made. With reference to a particular test of its value a considerable quantity of the wheat was procured and distributed in various sections of the country. The most favorable accounts have been received up to this time, in relation to the condition and promise of the growing crop, and it is most probable that the Fultz wheat will prove to be a very great acquisition to the wheat-producing interests of the country. Mr. Shem Zook, of Mifflin County, Pennsylvania, who has carefully noted the experiments made with this wheat in the section where it originated, in a letter to the Department, says:

I am satisfied that this new variety of wheat is the same kind which, forty years ago, was known by the name of "yellow blue stem." It was then considered a very productive wheat. The objection to it then was the extra time and labor required to thrash it by the old and objectionable mode of treading out with horses; the thrashing-machine, however, obviates this difficulty.

On well-cultivated farms the yield of the Fultz wheat has been from 30 to 35 bushels per acre, though it has yielded as high as 40 bushels and upward.

Mr. Zook has furnished the Department with a number of statements of experiments made with this wheat, many under the seal of affidavits, some of which are here appended:

Solomon Peachey, on 38 acres, raised 1,417 bushels and 30 pounds, or at the rate of 37 bushels and 17 pounds per acre. Two acres of California wheat, sown alongside of the Fultz, yielded only 25 bushels per acre. Mr. Peachey's whole crop of wheat in 1871 was 2,317 bushels on 67 acres. John Peachey, on 26 acres, raised 862 bushels, or 33 bushels per acre. Christian Peachey, on 25 acres, raised 925 bushels and 50 pounds, or 37 bushels and 2 pounds per acre. Simeon K. Zook, on 40 acres, raised 1,517 bushels, or 37 bushels and 55 pounds per acre. Off of 20 acres of this ground a crop of wheat was taken the year before. The last crop received no manure of any kind; the ground, however, had been previously limed and enriched with barn-yard manure.

Mr. Richard Brindle, of Mifflin County, makes the following affidavit:

On five acres of limestone and flint land I plowed the clover-sod for corn, then put on 150 bushels of lime per acre. The following spring sowed with oats. On the oats stubble I spread a good coat of very rich stable manure, then plowed the ground once, going over it with a heavy three-horse cultivator; harrowed the ground twice, and drilled in two bushels of Fultz wheat on each acre. The yield of wheat was fully two

hundred and thirty bushels on the five acres, which weighed 64 pounds per bushel. Yield per acre, at weight, forty-nine bushels and four pounds.

On three acres and one hundred and forty-four perches Mr. E. Kaufman reports a yield of 166 bushels of this wheat.

Mr. B. J. McLin, Salisbury, West Tennessee, is much pleased with the Fultz wheat. The young plants are much more vigorous than the native wheat.

Mr. A. J. Hamilton, superintendent of the western experimental farm of Pennsylvania, finds the Fultz wheat to stand the rigors of the climate very well, looking green and promising.

LOCAL STATISTICS.—Our correspondent in Jefferson County, West Virginia, Henry C. Evans, communicates the following statistics of the county:

Product.	Amount of crop.	Average per acre.	Acres to each crop.	Average price per bush., &c.	Total valuation.
Indian corn.....bush..	327,525	14.28	22,926	\$0 60	\$196,515 00
Wheat.....do...	335,447	10.9	30,693	1 50	503,170 50
Rye.....do...	11,327	9.5	1,192	80	9,061 60
Oats.....do...	49,120	10.	4,912	60	29,472 00
Barley.....do...	152	8.	19	85	129 20
Buckwheat.....do...	493	7.5	67	1 25	616 25
Beans.....do...	102	12.	8.5	2 60	265 20
Potatoes, Irish.....do...	22,440	55.	403	90	20,196 00
Potatoes, sweet.....do...	225	50.	4.5	1 50	337 50
Clover seed.....do...	800	1.3	-----	7 00	5,600 00
Turnips.....do...	550	50.	11	40	220 00
Sorghum.....galls..	864	36.	24	70	604 80
Wine.....do...	1,200	120.	10	1 50	1,800 00
Tobacco.....lbs..	6,035	575.	10.5	12	724 20
Hay.....tons..	4,760	1.	4,760	20 00	95,200 00
Total.....	-----	-----	65,045.5	-----	863,912 25

This shows an increased acreage of 600 acres, and an increase in total valuation of nearly \$9,000, as compared with 1870. Clover seed, which was a very light crop in 1870, was not included in the table for that year, and the acreage of clover seed is not given in this table, because it is a second crop.

LIVE STOCK AT CHICAGO.—George T. Williams, assistant secretary, supplies the following report of receipts and shipments of live stock at the Union Stock Yards, Chicago, Illinois, for the year ending December 31, 1871:

RECEIPTS.

Source of supply.	Cattle.	Hogs.	Sheep.	Horses.
Chicago, Rock Island and Pacific Railroad.....	72,406	384,562	38,810	833
Illinois Central Railroad.....	79,438	441,548	74,874	1,079
Chicago, Burlington and Quincy Railroad.....	188,682	678,501	31,022	1,737
Chicago and Northwestern Railroad.....	78,697	532,242	53,485	1,503
Chicago and Alton Railroad.....	105,311	260,058	27,420	646
Pittsburgh, Fort Wayne and Chicago Railroad.....	486	7,220	941	24
Michigan Central Railroad.....	1,535	18,377	5,926	65
Michigan Southern Railroad.....	3,989	28,876	14,476	18
Pittsburgh, Cincinnati and St. Louis Railroad.....	2,395	10,835	5,905	26
Chicago, Danville and Vincennes Railroad.....	4,360	17,916	1,987	-----
Driven into yards.....	5,751	948	207	-----
Total in 1871.....	543,050	2,380,083	315,053	5,936
Total in 1870.....	532,964	1,693,158	349,855	3 537

SHIPMENTS.

Source of supply.	Cattle.	Hogs.	Sheep.	Horses.
Chicago, Rock Island and Pacific Railroad.....	7, 496	135	529	23
Illinois Central Railroad	8, 226	461	345	13
Chicago, Burlington and Quincy Railroad.....	3, 488	276	1, 756	50
Chicago and Northwestern Railroad	3, 863	1, 544	2, 169	659
Chicago and Alton Railroad.....	8, 423	792	725	65
Pittsburgh, Fort Wayne and Chicago Railroad	124, 599	290, 062	67, 417	1, 414
Michigan Central Railroad.....	116, 684	377, 671	55, 648	705
Michigan Southern Railroad.....	124, 699	484, 251	5, 769	2, 512
Pittsburgh, Cincinnati and St. Louis Railroad.....	4, 444	7, 094	666	41
Total in 1871.....	401, 927	1, 162, 286	135, 084	5, 482
Total in 1870.....	391, 709	924, 453	116, 711	3, 488

TAPPAHANNOCK WHEAT IN OHIO.—Mr. G. S. Innis, of Columbus, Ohio, reports that, about the year 1858, he received from the Department one-half bushel of Tappahannock wheat, which he sowed carefully with a drill, obtaining 22 bushels, although the wheat crop of the county averaged less than 5 bushels per acre, on account of a severe frost on the 6th of June. The Tappahannock being earlier, escaped the frost and the red weevil, then very destructive. The following year he sowed $8\frac{1}{2}$ acres with a portion of the above product, distributing the rest. On his own land he obtained 42 bushels per acre, and all those to whom he distributed harvested good crops, ranging from 30 to 35 bushels per acre. Since that time thousands of bushels have been raised in that county, and always with success.

TAPPAHANNOCK WHEAT IN UTAH.—The secretary of the Utah County Agricultural Society, Utah, states that one quart of Tappahannock wheat, received from the Department two years ago, produced two bushels the first year, and one bushel of this sown in September, 1870, on 147 rods of medium land, following a crop of sugar-cane, produced 31 bushels of wheat, weighing 62 pounds to the bushel. Some of this crop, on being milled, turned out 42 pounds of good flour to the bushel.

SPRING-WHEAT IN CENTRAL ILLINOIS.—Mr. Seth Talbot, jr., of Tremont, Tazewell County, Illinois, says that farmers in that county have almost abandoned the raising of spring-wheat, and that, during the last five years, it has not paid for cultivation. Last year it was an entire failure.

WHEAT IN NEBRASKA.—Mr. L. A. Walker, of Omaha, Nebraska, calls attention to the great depreciation in the yield of wheat, per acre, in that region.

CEREALS IN UTAH.—Mr. George Roberts, of Minersville, Beaver County, says that the oats sent out by the Department have surpassed expectations, thrashing out 48 pounds per bushel. There had been a great deterioration of seed, but since supplies have been received from the Department a marked improvement has been observable.

WHEAT IN VIRGINIA.—Mr. William James, of Ashland, Hanover County, Virginia, claims that his State possesses the best conditions for wheat-growing, prime flour from Virginia wheat ranging \$1 per barrel above prices of other market brands. He criticises the current methods of cultivation, and objects to the practice of shallow plowing in vogue in his section.

CULTURE OF CEREALS IN VIRGINIA.—Mr. John A. Packer, Tappanhook, Essex County, says:

The Fultz wheat and Excelsior rye and oats you so kindly sent me in October last all bid fair to afford a large yield for the quantity seeded. The wheat has more branches than I have seen. The cultivation of wheat, formerly our staple crop, we have to abandon and substitute other crops. Fifteen years ago we obtained from 20 to 25 bushels per acre. Now we do not average 5 bushels; and yet other crops have not diminished, thus showing that our failure to make wheat is not caused by want of strength in the land, but by other causes not yet discovered.

COTTON EXPERIMENTS IN NORTH CAROLINA.—Mr. F. A. Archibald, Concord, North Carolina, discards both Egyptian and Chinese cotton, as producing only half the quantity of lint of the Gulf cotton. He finds Boyd's Prolific to yield about 1,000 pounds of seed-cotton per acre, worth \$18 50; Dixon, 850 pounds, worth \$18 50; Gulf cotton, 750 pounds, worth \$18; Holmes's Prolific, 750 pounds, worth \$18; Peeler, 950 pounds, worth \$20 25; Egyptian, 375 pounds; Chinese, 300 pounds.

SEA-ISLAND COTTON.—Mr. Evan Evans, of Charleston, South Carolina, says the cultivation of sea-island cotton has become so precarious from uncertainty of labor and want of capital that it must be superseded by some other crop. He therefore solicits jute-seed for his plantation on Saint John's Island.

GRAPES AND WINE ON KELLEY'S ISLAND, LAKE ERIE.—Addison Kelley, president of the Kelley's Island Wine Company, says:

The Kelley's Island Wine Company have made this year 155,000 gallons, and other parties here 132,000 gallons. The Kelley's Island Wine Company made an addition of six new wine-cellars, each 123 feet long, and put in six steam-presses, adding 250,000 gallons capacity, and making the whole capacity 350,000 gallons.

NEW CONDITIONS OF CULTURE IN FLORIDA.—A correspondent in Alachua County says:

I formerly owned one hundred and ten slaves, and made 100 bales of sea-island cotton. I had a large stock of cattle, &c. I now own 2,000 acres, one-half cleared and fenced. In 1866 I worked eighty-five hands, thirty of whom were males. I am now convinced from experience that four plows, with high manuring and diversity of crops, will furnish a better support and a larger income than I formerly received from all my former slaves.

I shall plant 10 acres in arrow-root this year. From an experiment with a quarter of an acre I made at the rate of \$500 per acre. The yield is large and certain, but the process is tedious. If you could tell us where the machine could be got to grate or pound it, or indicate the best process of drying, &c., we could make enough in a few years to supply the demand without importation.

IRRIGATION IN UTAH.—Two bills have been introduced in Congress in aid of irrigation in Utah. One of these contemplates the incorporation of a company with a capital of \$1,000,000, for the irrigation of Bear River Valley, by means of a canal to be constructed from the lower falls of Bear River to the northern end of Great Salt Lake; and it is proposed that, for this purpose, three sections of public land per mile on each side of the canal be granted to the company. The canal is to be 10 feet wide at the water-level, and 4 feet deep, and is to have a uniform current of not less than two miles per hour. The other bill has in view the construction of a canal on each side of the Jordan River, to irrigate and reclaim desert-lands lying along that river, and extending from Utah Lake to Great Salt Lake. For this purpose alternate sections of land lying between the lines of the canals and the river are to be granted to the Territory of Utah; the land and its proceeds to be applied solely to the enterprise in question; sales to be authorized only as the work progresses. The legislature of the Territory is empowered to incorporate a company or companies, and to transfer to

these parties the rights of construction and the lands and franchises therewith connected.

CORN IN MASON COUNTY, ILLINOIS.—Mr. J. Cochrane, of Havana, Illinois, in a letter dated February 1, offers an approximate estimate of the corn crops of Mason County, with a statement of the basis on which the estimate is formed, embracing the following points: Corn is bought at thirteen points on three railroads, and also for shipment on the Illinois River, at Havana. The amount of the current crop taken up by buyers at the latter place is reported by them at 500,000 to date, and the other points have taken 1,000,000 bushels. The amount coming forward, unsold, is 1,500,000 bushels, and the amount absorbed in stock-feed is put at 1,000,000 bushels, (although this is probably much below the actual amount,) making a total of quite 4,000,000 bushels. The crop of last year was cut short by drought and chinch-bugs, and the corn product of the county, in a fair season, may be safely placed at 6,000,000 bushels.

CHEESE.—In the six principal dairy counties of Scotland it is estimated that the milk of rather more than 100,000 cows is utilized for the purpose of making cheese. The product is 18,000 tons annually; worth, at the average price of last year, about \$5,000,000. The Ayrshire cows, that are eminent for their milking qualities, even when fed on poor pastures, form the favorite breed. The cheese is made for about one hundred and ninety days in the summer period of the year. After this milk is made into butter; or, if near a railroad station, sent into town for sale. The American cheese-factory system is gradually being adopted. The consumption of cheese is rapidly increasing and is appreciated by the laboring classes, entering largely into their daily diet. The reports of the American dairymen's associations are reprinted in England. Many of the old English brands of cheese are passed by and declined on coming into competition with recent American importations.

SPLenic OR PERIODIC FEVER IN CATTLE.—Professor Gamgee's report on this disease, which was made to the Department of Agriculture and published in the annual report of 1869, is being republished in England as an object of equal interest to farmers in both Europe and America.

CONDENSED MILK has become an article of extensive use in London, as well as for shipping purposes. The shelves of English grocers are filled with the product of the Anglo-Swiss Company, which has 2,000 cows, and the Aylesbury Company, that has 1,000. There are several other large milk companies whose brands are well known to the shipping trade. In Switzerland, Bavaria, and several districts on the continent, are large companies engaged in preparing condensed milk. The competition thus induced in its manufacture, with the application of science, has resulted in producing an article of great purity. Dealers in milk are now fined heavily in England when convicted of diluting the article with even sixteen per cent. of water.

ARGENTINE EXPOSITION.—The official report of the Government commission on the trial of agricultural machinery at Cordova, in the Argentine Republic, has been received at the Department of Agriculture. As was to be expected, the contributions from the United States formed a prominent feature of the exhibition. Of 151 entries of plows, mowing-machines, reapers, harrows, seed-drills, cultivators, thrashing and mow-

ing machines, sugar-mills, horse-powers, steam-engines, &c., 89 were from the United States, embracing the firms of Collins & Co., Hartford, Connecticut; the Ames Plow Company, Nourse, Mason & Co., and Page & Son, Boston; John Moore, Geo. M. Sergeant, Treadwell & Co., Fords & Howe, F. Nishwitz, A. Platt & Co., Goodwin & Son, W. A. Wood, Sheble & Fisher, and A. Jack & Sons, of New York; and others. The sugar-mills, horse-powers, and locomotive steam-engines were prominent among the articles exhibited from England.

TO DESTROY DISEASE GERMS IN CLOTHING.—For this purpose the beds and clothing from the scarletina patients, at the sanatoria of large institutions in England, have been baked at a high temperature. Researches seem to show that the miasm is not destroyed by the heat of the disinfecting chambers; also that steeping the patient's clothing, before washing, in a strong solution of bleaching powder frequently injures it. To obviate these objections, Dr. Calvert, who has devoted much attention to the study of disinfectants, and sanitary chemistry generally, recommends a dilute solution of carbolic acid. It is easy to mix, perfectly soluble, has no injurious action upon fabrics in the diluted state, and the editor of the London Microscopical Journal thinks it will insure the complete destruction of any of the lower organisms.

CINCHONA.—The British government has established a Cinchona plantation at St. Helena, at an elevation of 2600 feet above the sea. The London Journal of Botany states that there are now nearly one thousand trees, in a fine healthy condition, the tallest between 7 and 8 feet above the ground. The nature of the land forming the plantation is very steep and rugged. The entire cost of the trees, exclusive of the superintendent's salary, is about \$1 50 each. Plantations of pines and other valuable timber trees have also been established, and efforts are making to introduce the cultivation of tobacco and guinea hemp, (*Sanciera guineensis*), the latter valuable for its fiber. The superintendent is training up a number of apprentices with a view to their being ultimately useful in the island, where the arts of horticulture and arboriculture have been much neglected.

SHEEP-HUSBANDRY IN PENNSYLVANIA.—Mr. J. S. Elder, of Darlington, Beaver County, complains that farmers in that region are pursuing the old routine in live-stock husbandry, buying at high prices and selling out at low prices in a panic. Because sheep-men last fall made the most money all live-stock enterprise is now directed toward sheep. Cattle and hogs are down. Mr. Elder describes a disease among sheep called the "poll disease," as destructive as the hoof-rot. In two seasons he lost his entire flock of 180.

WHEAT-SEED IN WISCONSIN.—Mr. George B. Kidder, president of the Star Prairie Farmers' Club, says:

The same kind of seed which we sowed in this vicinity eight years ago would produce, on new land, from 25 to 30 bushels per acre, while now the same seed sown on new land will not produce more than 10 to 15 bushels per acre. The variety sown here for the last ten years is the Scotch Fife wheat. I have no doubt that the largest heads might have been gathered each season for eight or ten years, and thereby have improved the seed the same as potatoes or corn can be improved. I have picked the best ears, and those which got ripe the earliest, for several years, and have, thereby, improved my seed and made my corn from ten to fifteen days earlier; and I think the same can be said of any kind of grain or vegetable.

RAMIE CLEANING MACHINERY.—Mr. T. H. Murphy, of New Orleans, Louisiana, claims to have "invented machinery that can be worked in

the field to clean the fiber like dressed flax, from 1 to 15 acres per day only requiring from two to five men, with suitable horse or steam power.

WOOL FROM NEW SOUTH WALES.—The secretary of the agricultural society of New South Wales writes to the Commissioner that, owing to present facilities of communication with New York, via San Francisco, wool-buyers from the United States are now purchasing in the Australian rather than the English market. He states that he has shipped to R. U. Forbes & Co., New York, for the Chamber of Commerce of that city, thirty-three fleeces of wool which were presented at the last exhibition of the society in Sydney, and requests the Commissioner to arrange for an examination of these samples by competent judges. The society proposes a system of exchanges of blooded stock between this country and New South Wales. The secretary says that on one or two occasions rams have been received from the United States, but that they did not appear to be the best specimens; not equal to descriptions given in the reports of the Department.

A report of awards on wool at the above-mentioned exhibition, held in January, 1871, shows that, in class 1, of lots of twelve fleeces of ewes' wool, compared according to length, density, softness, fineness, elasticity, evenness of fleece, soundness, condition, and weight, the average weight of the lot taking the first prize of £10, was 4 pounds $1\frac{1}{2}$ ounce; age of animal, two years; age of fleece, three hundred and eighty days. The average weight of fleece taking the second prize of £5, was 3 pounds 11 ounces. The heaviest lot exhibited in this class averaged 5 pounds $13\frac{1}{2}$ ounces. In class 18, in a lot of five rams' fleeces in grease, taking a prize of £6, the average weight was 11 pounds $15\frac{1}{2}$ ounces; age of the wool, three hundred and sixty-five days. In class 19, lots of twelve ewes' fleeces in grease, the prize of £6 was awarded to a lot averaging 8 pounds $6\frac{3}{4}$ ounces. These prize fleeces are included in the shipment to New York.

AUSTRALIAN PRAIRIE GRASS.—Mr. E. J. Vann, of Madison, Florida, states that, having received from a friend a few seeds of "Australian prairie grass," over a year ago, he commenced experimenting with the article, and afterwards distributed to planters interested in the subject of grasses. His investigations have convinced him that this particular variety is of very great value for that region. One planting will afford two crops, and, by plowing in in the fall, cropping may be continued indefinitely.

FARMERS' CLUB IN NORTH CAROLINA.—Mr. D. C. McMaders, secretary of the Spero club, at Salem Church, North Carolina, states that one of the members produced last year, on 18 acres of poor land, 650 bushels of corn; on one acre, 78 bushels; another, 530 bushels of Irish potatoes to the acre.

WHITE SCHONEN OATS IN GEORGIA.—Mr. John H. Dent, of Cave Springs, Georgia, says:

Last year I received a pint of the White Schonen oats from the Agricultural Department, which yielded a half bushel, notwithstanding it was the most disastrous season for oats, for this section of country, experienced for many years. I shall sow the half bushel in February, and be enabled to give them a fair test for the year. The best oat we ever raised in this country is the Grazing oat; the Norway oats were a complete failure.

CONDITION OF LIVE-STOCK IN KANSAS.—Mr. J. M. Miller, Peabody, Marion county, says:

The winter has been very severe; stock is suffering much in consequence. One

stock-farmer in Butler county lost between 25 and 50 per cent. on account of severe weather. This is the largest per cent. of loss I know of, though many have lost more.

INQUIRY CONCERNING JUTE.—Mr. W. H. Harris, of Red River Landing, Louisiana, states that last year he raised a small quantity of jute in his garden, saving the seed, and asks information as to the method of preparing the fiber for market. His inquiry is covered by the information given in the monthly report for October, 1871. Mr. Harris also writes that he has a cork oak twelve inches in diameter, grown from an acorn obtained from the Department before the war.

FRUIT AND SUGAR IN SOUTHEASTERN LOUISIANA.—Mr. F. E. Guedry, of Covington, Saint Tammany Parish, Louisiana, informs us that his section has a solid clay subsoil, which retains any fertilizer applied to the land, and that, while well adapted to any kind of grain, it is especially suited to fruit-growing. He adds that planters in that vicinity are cultivating sugar-cane to some extent, and, although the crop is comparatively a new one there, its success has been so great that many have invested in it largely.

MEXICAN WHITE FLINT CORN.—Mr. Joseph N. Brewer, of Lexington, Massachusetts, stating his experience with this variety, says that its quality was exceedingly good when used in the green state, and that when ripened it produced a very superior meal. After planting it for three years it seemed to degenerate, though he suspects that the seed used the last year was not carefully ripened, and that this may account for the apparent degeneration. On the whole, he is convinced that it is a valuable variety, deserving to be well tested in that latitude.

TREE-PLANTING IN KANSAS.—Mr. Percy Daniels, of Girard, Kansas, states that two years ago he put in about half an acre of European larch, Norway spruce, Scotch pine, and red cedar, but only a few plants came up, and these all died in from one to two weeks. He now thinks that good seed of the above descriptions, planted instead of young chestnuts, would be successful.

EXCELSIOR OATS IN OREGON.—Mr. William Phillips, of Clackamas, Clackamas County, Oregon, states that, having received last spring a small package of Excelsior oats, he sowed May 15th on fair soil, the resulting crop averaging 50 bushels per acre, by measure, the weight being considerably above standard. He also reports that some Maryland tobacco sown on hill land, after the middle of March, came up quickly, grew rapidly, and gave a product of excellent quality.

ARKANSAS LANDS.—Rev. A. R. Berrick, of Batesville, Arkansas, reports that some of the elevated, sandy uplands of that State are well suited for the production of fine tobacco, and that they can be bought at merely nominal prices. He himself possesses several hundred acres of this land, and finds it capable of producing 700 to 900 pounds of seed-cotton per acre, or 20 to 25 bushels of corn, or 10 to 12 bushels of wheat, per acre. It is also suited to apples, pears, peaches, and grapes.

AUTUMN IN SOUTHERN UTAH.—Mr. W. W. Hammond, of Toquerville, Utah, in a letter to the Department, dated December 8, 1871, writes that the past season was very hot and dry, stock finding very little grass on the hills, but that the fruit crops were generally good, meeting with a ready market in consequence of the development of the mining districts. More lately the weather was unusually cold, and considerable quantities of grapes were frozen before they could be picked, an

occurrence unparalleled since the settlement of that part of Utah, fifteen years ago.

THANET BARLEY IN WISCONSIN.—John A. Rice, M. D., of Merton, Waukesha County, Wisconsin, writes, that having received from the Department two pounds of Thanet barley, he sowed it April 21, on six square rods of light, clayey loam, not in the best condition of preparation. The barley grew remarkably fine and even, was harvested about the first of August, and on being thrashed turned out 113½ pounds of the finest grain ever grown in that region. He believes this variety to be a valuable acquisition to his locality, which is peculiarly adapted to barley. He devotes himself, however, more especially to growing corn, wheat, roots, and clover, feeding out almost all his crops to sheep, hogs, and cattle. Under this system his farm has increased most remarkably in fertility, so that where he cut 12 or 15 tons of hay at the time of taking possession of the property, he now cuts tenfold that amount, and the yield per acre of other crops has increased in nearly that proportion.

CHARGES OF TRANSPORTATION.—Mr. R. Emerys Jones, of Randolph Station, Dodge County, Wisconsin, writes that in that region the expenses of marketing absorb more than half the value of the farmer's products, and that the agricultural interest is suffering deplorably from this cause. He adds that the first cost of raising grain is about \$7 per acre.

CORN AND WHEAT ON TWENTY ACRES.—Dr. George D. Pearey, of Knightstown, Indiana, reports that in 1870, on twenty acres of dark, alluvial soil, thoroughly drained and deeply tilled, but unmanured, he obtained 1,200 bushels of corn, worth 50 cents per bushel. Value of pasturage after removal of the corn, \$20; expenses of making the crop, including \$120 interest on land, \$246 75; profit, \$373 25. He then sowed wheat on the same land, from which he obtained 400 bushels, July 5 and 6, 1872, worth \$1 50 per bushel, and netting a profit of \$300. Total profit on corn and wheat in fourteen months, \$673 25, or \$33 66 per acre.

Dr. Pearey adds that, in preparing his seed-corn, he soaked it over night in blood-warm water, and in the morning poured off the water, and put one gill of kerosene to every bushel of the corn, stirring it in. He declares this method a sure preventive against loss of seed by birds; he also believes that it hastens germination and prevents ravages by cut-worms.

TOBACCO IN HENDERSON COUNTY, KENTUCKY.—In a recent communication to the Department, Mr. Alexander H. Major, of Henderson County, Kentucky, furnishes some information as to current practice in marketing tobacco in that county, which, as he claims, produces a larger quantity of the staple than any other in the State. The article there grown is a heavy, coarse, leafy variety, and the yield per acre, on strong land, frequently reaches 1,800 or 2,000 pounds. The tobacco is not packed by the farmer, but is put up by him in bundles, or "hands," classified as "good," "lugs," and "trash." The middle and larger top-leaves, when uninjured, constitute the good; similar leaves, slightly worm-eaten and defective, together with the extreme top leaves, constitute the lugs; the leaves near the ground, and others, which are ragged and torn, are designated trash. In a good crop, properly managed, the trash will be not far from 16 per cent., but no farm product shows the difference between the careful and the negligent grower as quickly as this

crop. These different terms do not by any means give a definite indication of quality; the producer merely exhibits his samples, and sells to the "stemmers" at the highest bid. The stemmers convert the good, lugs, and such of the trash as can be made available for the purpose, into strips, and export to Liverpool and London. The remainder of the trash is shipped to New York, New Orleans, &c., and sold under the name of lugs.

FRUIT SHIPMENTS AT COBDEN AND MAKANDA, ILLINOIS.—The following is a statement of the amount of fruit shipped at Cobden, on the Illinois Central Railroad, during the season of 1871:

Descriptions.	Amounts.	Descriptions.	Amounts.
Strawberries.....	11,242 bushels.	Peaches	88,081 bushels.
Gooseberries.....	16 bushels.	Apricots.....	134 bushels.
Cherries.....	310 bushels.	Pears.....	772 bushels.
Raspberries.....	962 bushels.	Apples.....	16,953 bushels.
Blackberries.....	308 bushels.	Grapes.....	32,430 pounds.
Plums.....	29 bushels.	Dried fruit.....	57,075 pounds.

There were also shipped 327 bushels of peach seeds; 2,633 bushels of tomatoes; 1,603 bushels of sweet potatoes, and 342 bushels of Irish potatoes.

At Makanda, on the same road, were shipped 130,000 pounds of strawberries, in May, and 22,110 pounds in June; 24,850 pounds of raspberries in June; 1,208,500 pounds of peaches in July, and 788,300 pounds in August.

THE UTAH AND NORTHERN RAILROAD.—A bill has been introduced into Congress to enable the Utah and Northern Railroad Company, incorporated under the laws of Utah, to extend its line by way of Bear River Valley, Soda Springs, Snake River Valley, and through Montana to the Northern Pacific Road. The bill grants right of way to the company to the extent of 100 feet in width on each side of the road, through the public lands traversed by it; also, at each station, an amount of land, not exceeding forty acres, for station buildings, workshops, &c. The company is authorized to raise by mortgage a sum not exceeding \$15,000 per mile of the length of the road.

GEORGIA CORN IN EGYPT.—General Charles P. Stone, formerly of the United States Army, but now attached to the Egyptian war office, at Cairo, reports a very satisfactory cultivation of Georgia corn, the seed of which was received from this Department. It was not planted till the 20th of August last, thus losing eight days of the hot summer weather. It came up in four days, and, being well irrigated with Nile water, grew rapidly, reaching the height of 8 feet, and throwing out three or four shoots from each stalk. The ears were gathered at Christmas, full and ripe, but not so long as he expected to see them. The hills were shaded by orange trees, and hence the experiment did not succeed as well as it might have done.

AGRICULTURE IN ALABAMA.—Mr. James M. Moss, of Huntsville, in asking for fresh sorghum-seed, states that this kind of seed has run out in that neighborhood, and that it is no longer fit to plant. He says:

Times are very quiet here now, with more of a disposition to attend to business than at any time before; and quite a feeling is arising to improve farms and go into stock and mixed farming.

EXPERIMENTS WITH GRASS-SEEDS AND CORN.—Mr. Charles Wallace, Roseville, Franklin County, Arkansas, says:

In order to give you an idea of our soil and climate, I would state that on the 22d day of April last I sowed one acre in Hungarian grass-seed, which, by the 19th of June, was ripe enough to cut. I mowed it, broke up the ground and planted corn June 30th, and made 30 bushels sufficiently matured to save. Again, on the 15th of March, I sowed 4 acres of Norway oats, and cut a very heavy crop of it July 1. I then broke it up with single horses and planted it to corn July 12 and 13, harvesting full 30 bushels sufficiently matured to save. The fodder was pulled off of both pieces; the season was drier than any since the war, and the land upon which the experiment was made had been in cultivation for thirty-five years.

From your correspondent in Johnson County, I obtained a small quantity of Italian and perennial rye-grass seed; sowed them in separate beds "well prepared," March 14. They were both quite slow in germinating, being very much shaded, but in the latter part of May they commenced growing finely. By the middle of June both beds were thickly covered and were much admired by all who saw them.

Cotton has been raised to the exclusion of everything else in this section, and, as yet, no effort has been made to develop its agricultural resources. I have experimented considerably in the last few years, and have thus far succeeded in raising fair crops of everything planted.

HARD TIMES IN WISCONSIN.—Mr. R. E. Jones, Randolph Station, Dodge County, says:

The condition of the farmers is deplorable; it costs one-half of their produce to get it to market. For the last two years our crops in this State were not over 10 bushels per acre, and the whole county is overrun with wild oats.

GRASSES FOR THE SOUTH.—Mr. John F. Rollins, Fort George, Florida, in soliciting a supply of the seed of *Lepedeza striata*, or Japan clover-seed, says:

I have a large plantation, consisting of an entire sea island, and I am satisfied that many of the old fields now under cultivation would be much more profitable if planted in grass or clover and devoted to stock than under the present system of annual crops. What is true in my case is equally true all over the South. If the Agricultural Department can aid us in finding a plant that will take the place of the wild grasses and furnish forage for stock, a great work will be done.

FRUIT AND FERTILIZERS IN GEORGIA.—Mr. E. J. Purse, of Marlow, Georgia, has been experimenting with several varieties of the strawberry, viz: Agriculturist, Wilson's Albany Seedling, Triomphe de Gand, and Green Prolific. He finds the two first named well adapted to southern culture. Heat affects the berry much more than cold, the finest berries being found between March and July, and from October to the middle of December. Mr. Purse says:

I have a small farm and have succeeded very well in the manipulation of a fertilizer that is abundant and cheap; that is one part clay, one leaf-mold, and one swamp-muck, with a barrel of lime or land-plaster to the ton. When the leaf-mold is not procurable leaves will do as well. I use the cow-pen, stable, or night-soil, as the stimulant, by mixing with my standard as the plants need. Reserve the chicken-house for liquid applications.

FRUIT IN SOUTHERN ILLINOIS.—A letter addressed to the Department by a number of farmers of South Pass, Union County, states there were shipped during the late fruit season from that railroad station 11,242 bushels of strawberries, 16 gooseberries, 310 cherries, 962 raspberries, 308 blackberries, 29 plums, 88,081 peaches, 134 apricots, 772 pears, 16,953 apples, 2,633 tomatoes, 1,603 sweet-potatoes, 342 Irish potatoes, 200 onions, 32,430 pounds of grapes, and 57,075 of dried fruit. It is proposed to introduce tea-culture, among other industries.

SOIL AND CROPS IN NEBRASKA.—Mr. W. J. McIntyre, Ashland, Saunders County, says:

The soil here is rich vegetable loam, slightly intermixed with a very fine sand, and is of great depth and fertility. The surface of the country is rolling, with the best

natural drainage I ever saw. The uplands are wholly prairie, seemingly well adapted to the production of small grain of all kinds, or of corn. Spring-wheat has been the main wheat crop heretofore, but winter-wheat is beginning to be quite extensively sown. It seems to promise well so far.

ANGORA GOATS IN UTAH.—J. E. Johnson, editor of the Utah Pomologist, published at Saint George, has just formed a co-operative company, and negotiated for the importation of a herd of 130 Angora and Thibet goats. By a terrible storm they lost a number on the Union Pacific Railroad, but have finally succeeded in getting 108, which appear in good health. They intend crossing with the common goat, bringing up the quality to full-blood.

ALKALINE LANDS IN UTAH.—Mr. John Woodhouse, of Lehi City, Utah, writes that some of his heaviest crops are from land which, four years ago, was totally barren, in consequence of the alkali it contained. He states that the proper treatment of such soils is to plow in an abundance of coarse, half-rotted manure, and then flow water completely over the land, instead of around it. Generally, this will bring the land to in from two to five years, according to the proportion of alkali in the soil.

TREE-PLANTING IN KANSAS.—Mr. Riley M. Hoskinson, of Burlingame, Kansas, informs us that he now has on his prairie farm several thousand trees, planted by him and his family within the last five years, among which are oak, walnut, soft-maple, elm, white-ash, sycamore, catalpa, white and yellow willow, mulberry, and cottonwood. Many of his cottonwoods are now about thirty feet high and six inches in diameter.

A HARDY VARIETY OF OATS IN TEXAS.—Mr. George A. Smith, Belton, Bell County, Texas, says:

We have a valuable oat here—the pea or rustless oat—that always succeeds and yields from 30 to 100 bushels to the acre; a great acquisition to the South, where the crop so often fails from rust.

WHEAT-SEED IN IOWA.—Mr. George Huston, Dodgeville, Des Moines County, says:

A general infusion of new seed-wheat would be a great blessing to the State of Iowa. spring-wheat deteriorates more rapidly here than any other seed. The great reason for this consists in the fact that we never allow a piece of wheat to stand until it is fully ripe, and then save it for seed.

WHEAT EXPERIMENT IN MINNESOTA.—Mr. L. F. Pike, Owatonna, Steele County, last spring, sowed Red Australian spring-wheat, received from this Department, in drills about one foot apart, hoeing out the weeds. His effort was a failure, as was also those of a number of neighboring farmers. This variety is thought to be too late for that climate.

ORANGE GROVE.—A correspondent writes that H. J. Sanford, of Melonville, Orange County, Florida, is now setting out 125 acres in orange trees, which will be, in a year from now, the largest orange grove on this continent. He is also planting largely of other semi-tropical fruits.

PROGRESS OF STEAM CULTIVATION IN EUROPE.—At an agricultural meeting lately held in Scotland, Mr. Grey, of Aberdeen, gave some account of the progress of steam cultivation since 1855, in which year the late John Fowler started his first steam-plow in Essex, which was a very successful attempt. He subsequently expended \$350,000 in experiments, but after a few years he had nothing to represent this amount of invested capital except a lot of old machinery. The solution of the

question whether plowing could be done cheaper with steam than with horses was decided in 1858; its importance may be learned from the fact that there are works in the country employing twelve hundred men in nothing else than making steam-plows. One farmer in Egypt employs four hundred steam-plows; he is also laying down four hundred miles of railway on his farm, principally to carry sugar-cane to his mills, and has ordered thirty locomotive-engines, and \$3,000,000 worth of sugar machinery. This farmer is the Pacha. In Germany steam culture is making a revolution in agriculture. In England there are between 400 and 500 sets of tackle working for hire. These are held by companies as well as by private individuals; the investment has been found to be profitable.

A gentleman bought five hundred acres near London, that could not be rented at \$3 per acre. He took down all the fences, drained the land, bought a steam-plow, and put all in grain crops. Last year his clear profits were \$18,000 after allowing \$10 per acre for rent. The soil is a stiff clay that cannot be cultivated profitably by horse-power. Another farmer bought five thousand acres of what was considered worthless clay land, and by steam-power stirred it 3 feet deep, producing crops last year nearly 7 feet high.

In Scotland steam cultivation is becoming quite general, producing astonishing results. Many of the farmers there have invested from \$6,000 to \$10,000 in steam machinery, and find that it pays better than horse-power. Joint-stock companies are also in existence that invest in land and steam machinery, and secure large dividends.

MARKET PRICES OF FARM PRODUCTS.

FOR FEBRUARY, 1872.

Articles.	Price.	Articles.	Price.
NEW YORK.		NEW YORK—Continued.	
Flour, superfine State... per bbl.	\$5 75 to \$6 10	Cheese, western dairy... per lb..	\$0 12 to \$0 15
extra State.....do.....	6 45 to 7 25	State factory.....do.....	14 to 16
superfine western.....do.....	5 75 to 6 70	Cotton, ordinary to good ordi-	
extra to choice western,		nary.....per lb.....	19½ to 21½
per barrel.....	6 35 to 9 50	middling to good mid-	
extra southern.....per bbl.	6 75 to 7 35	dling.....per lb.....	22 5-6 to 24
good to choice southern,		Tobacco, lugs, all grades, per lb..	7½ to 84
per barrel.....	7 40 to 9 50	common leaf, all grades,	
Wheat, No. 1 spring...per bush..	1 56 to 1 58	per lb.....	8½ to 10
No. 2 spring.....do.....	1 50 to 1 54	Wool, Michigan.....per lb..	75 to —
winter, red western do..	1 60 to 1 66	Ohio.....do.....	62 to 80
amber, western.....do.....	1 65 to 1 72	Texas.....do.....	42 to —
white, western.....do.....	1 65 to 1 78	California fall clip.....do....	33 to 37½
Rye.....do.....	92 to 92½		
Barley.....do.....	84 to 87½	BOSTON.	
Oats.....do.....	53½ to 55½	Flour, western, superfine, per bbl.	5 50 to 5 75
Corn, new western, mixed, do....	73 to 74½	western extras.....do.....	6 50 to 8 00
old western, mixed.....do.....	— to —	western choice.....do.....	8 50 to 10 00
Hay, shipping qualities, per ton..	27 00 to 28 00	southern extras.....do.....	6 75 to 7 00
prime.....do.....	30 00 to 35 00	choice Baltimore.....do....	9 00 to 10 25
Pork, mess.....per bbl..	13 50 to 14 50	Wheat.....per bush..	1 60 to 1 63
prime.....do.....	12 25 to —	Rye.....do.....	90 to 95
Beef, plain mess.....do.....	9 00 to 11 00	Barley.....do.....	75 to 1 10
extra mess.....do.....	11 00 to 13 00	Corn, southern yellow.....do....	75 to 77
Lard.....per lb..	9½ to 9¾	western mixed.....do.....	73 to 75
Butter, western.....do.....	12 to 23	western yellow.....do.....	75 to 77
State dairy.....do.....	21 to 37		

Market prices of farm products—Continued.

Articles.	Price.	Articles.	Price.
BOSTON—Continued.		CINCINNATI.	
Beef, mess..... per bbl..	\$10 00 to \$12 00	Flour, superfine..... per bbl..	\$6 00 to \$6 25
extra..... do.....	12 00 to 13 00	extra..... do.....	7 00 to 7 50
Pork, prime..... do.....	12 00 to 13 00	family..... do.....	7 15 to 7 35
mess..... do.....	14 75 to 15 00	Wheat, No. 1 white..... per bush..	1 60 to 1 65
Lard..... per lb.....	9½ to 10	No. 2 white..... do.....	1 55 to 1 60
Butter, N. Y. and Vt..... do.....	20 to 35	No. 1 red..... do.....	1 55 to 1 57
Canada choice..... do.....	27 to 30	No. 2 red..... do.....	1 52 to 1 54
western..... do.....	17 to 29	Corn, white..... do.....	50 to 51
Cheese, N. Y. and Vt. choice		yellow..... do.....	— to —
factory..... per lb.....	12 to 16	Oats, white..... do.....	44 to 45
Ohio factory..... do.....	11 to 15	mixed..... do.....	41 to 43
Hay..... per ton.....	30 00 to 34 00	Barley, winter, No. 2..... do.....	70 to 80
Tobacco, choice..... per lb.....	12 to 14	spring, No. 2..... do.....	70 to 80
good western..... do.....	11 to —	Hay, tight-pressed, common to	
common to medium, do.....	10 to 11	choice..... per ton.....	14 00 to 21 00
Wool, Ohio and Penn..... per lb.....	65 to 80	loose-pressed, prime to	
Michigan..... do.....	65 to 75	choice..... per ton.....	17 00 to 21 00
other western..... do.....	60 to 74	Pork, mess..... per bbl.....	13 25 to —
California..... do.....	30 to 55	prime..... do.....	— to —
Texas..... do.....	30 to 50	Beef, plate..... do.....	12 50 to —
PHILADELPHIA.		hams..... do.....	26 00 to 28 00
Flour, superfine..... per bbl..	5 00 to 5 75	Lard, prime steam..... per lb.....	8½ to 9
extras..... do.....	5 75 to 6 50	Butter, western reserve..... do.....	23 to 25
family & fancy brands, do.....	7 25 to 10 00	choice cent'l Ohio, do.....	20 to 22
Wheat, Penn. and western—		Cheese, western reserve..... do.....	— to —
red..... per bush.....	1 55 to 1 60	choice factory..... do.....	15 to 16
amber..... do.....	1 62 to 1 66	Tobacco, lugs, all grades..... do.....	7 to 18
white..... do.....	1 70 to 1 75	leaf..... do.....	8 to 30
Rye..... do.....	92 to —	Cotton, low ordinary to good	
Corn, yellow..... do.....	65 to 68	ordinary..... per lb.....	— to 21
mixed western..... do.....	69 to 70	low middling to good	
Oats, white western..... do.....	55 to 56	middling..... per lb.....	21½ to 23
Pork, mess..... per bbl.....	14 00 to 14 75	Wool, tub-washed..... do.....	70 to 75
Beef, mess extra, city-packed,		fleece-washed, manufactur-	
per bbl.....	14 75 to —	ing..... per lb.....	50 to 55
Lard..... per lb.....	9½ to 9¾	fleece-washed, combing,	
Hay, prime..... per ton.....	32 00 to 34 00	per lb.....	52 to 55
mixed..... do.....	24 00 to 26 00	unwashed, manuf'g do.....	42 to 45
Butter, choice roll..... per lb.....	23 to 25	unwashed, comb'g do.....	42 to 45
choice tub, fresh, do.....	20 to 25	pulled..... do.....	60 to 62
Cheese, N. Y. factory..... do.....	14 to 15	CHICAGO.	
N. Y. dairy..... do.....	15 to 16½	Flour, winter extras..... per bbl..	8 25 to 8 50
Wool, picklock..... do.....	80 to 85	spring extras..... do.....	6 12½ to 7 00
extras..... do.....	74 to 76	Wheat, No. 1 spring..... per bush..	1 23½ to 1 29
medium and coarse, do.....	75 to 80	No. 2 spring..... do.....	1 23½ to 1 23¾
BALTIMORE.		No. 3 spring..... do.....	1 13½ to 1 14
Flour, superfine..... per bbl..	6 00 to 6 50	Corn, No. 2..... do.....	40 13-16 to 41½
extras..... do.....	6 75 to 7 50	rejected..... do.....	37 to 37½
family..... do.....	7 50 to 8 00	Oats, No. 2..... do.....	32½ to 32¾
Wheat, Pennsylvania..... per bush	1 57 to 1 67	rejected..... do.....	29 to —
western..... do.....	1 82 to —	Rye, No. 2..... do.....	68½ to 69
southern..... do.....	1 64 to 1 77	Barley, No. 2..... do.....	60½ to —
Rye..... do.....	1 00 to —	Hay, timothy (on track) per ton.	12 00 to 15 00
Corn, yellow..... do.....	67 to 70	prairie..... do.....	9 00 to 11 00
white..... do.....	66 to 68	Pork, mess..... per bbl.....	12 70 to 13 40
Oats..... do.....	54 to 57	extra..... do.....	— to —
Hay, western..... per ton.....	— to —	Beef, mess..... do.....	8 00 to 10 00
Penn. and Maryland, do.....	25 00 to 27 00	Lard..... per lb.....	8½ to 9¼
Pork, mess..... per bbl.....	14 50 to 15 00	Butter, choice dairy..... do.....	22 to 25
Butter, western, prime to		fair to good tub and fir-	
choice..... per lb.....	23 to 25	kin..... per lb.....	13 to 16
New York..... do.....	30 to 37	Cheese, New York factory, do.....	15 to —
Cheese, western factory..... do.....	14 to 15	western, factory..... do.....	12 to 13
eastern factory..... do.....	15½ to 16	Ohio, factory..... do.....	13 to —
Lard..... do.....	9½ to 11½	Wool, medium fleece..... do.....	58 to 62
Cotton, ordinary to good ordi-		unwashed medium, do.....	38 to 43
nary..... per lb.....	— to 20½	tub-washed..... do.....	50 to 76
low middling to mid-		NEW ORLEANS.	
dling..... per lb.....	21½ to 22	Flour, superfine..... per bbl..	6 75 to 7 00
Tobacco, common to good lugs,		extras, (according to	
per lb.....	7 to 82½	grade)..... per bbl.....	7 25 to 9 75
common to medium		Corn, white..... per bush.....	85 to 90
leaf..... per lb.....	8 to 9½	yellow..... do.....	— to —
Wool, unwashed, free from		mixed..... do.....	83 to 85
burrs..... per lb.....	44 to 46	Oats..... do.....	63 to 68
tub-washed..... do.....	63 to 70	Hay, choice..... per ton.....	23 00 to 30 00

Market prices of farm products—Continued.

Articles.	Price.	Articles.	Price.
NEW ORLEANS—Continued.		ST. LOUIS—Continued.	
Hay, prime.....per ton..	\$27 00 to \$28 00	Lard, prime steam.....per lb..	\$0 8 $\frac{1}{2}$ to —
Pork, mess.....per bbl..	15 50 to 15 87 $\frac{1}{2}$	kettle.....do.....	8 $\frac{1}{2}$ to —
Beef, mess, (Texas).....do..	— to —	Butter, choice.....do.....	22 to \$0 33
Lard, tierce.....per lb..	9 $\frac{1}{4}$ to 10	medium to fair.....do.....	12 to 17
keg.....do.....	10 $\frac{1}{4}$ to 10 $\frac{1}{2}$	Cheese, choice factory.....do.....	14 $\frac{1}{2}$ to 15
Butter, choice western.....do..	22 to 25	Cotton, middling.....do.....	21 $\frac{7}{8}$ to —
Goshen.....do.....	32 to 34	Tobacco, lugs.....per cwt..	5 60 to 5 90
Cheese, choice factory.....do..	14 to 15	common leaf.....do.....	— to —
western reserve.....do.....	13 to 13 $\frac{1}{2}$	medium to good leaf,	
New York cream.....do.....	17 to —	per cwt.....	— to —
Cotton, ordinary to good ordi-		Wool, tub-washed.....per lb..	78 to 79
nary.....per lb.....	19 $\frac{1}{2}$ to 20 $\frac{7}{8}$	fleece-washed.....do.....	— to —
middling to good mid-		unwashed medium.....do....	46 to 49
dling.....per lb.....	22 to 22 $\frac{7}{8}$		
Tobacco, lugs.....do.....	7 $\frac{1}{2}$ to 8	SAN FRANCISCO.	
low leaf.....do.....	8 $\frac{1}{2}$ to 9	Flour, superfine.....per bbl..	5 50 to 5 75
medium leaf.....do.....	9 $\frac{1}{2}$ to 10	extra super.....do.....	5 87 $\frac{1}{2}$ to 6 00
ST. LOUIS.		higher grades.....do.....	6 25 to 6 50
Flour, superfine.....per bbl..	5 50 to —	Wheat, State.....per cental..	2 05 to 2 15
extras.....do.....	6 00 to 6 75	Oregon.....do.....	2 10 to 2 15
choice.....do.....	7 50 to 8 00	Corn, white.....do.....	1 50 to —
Wheat, red.....per bush..	1 57 $\frac{1}{2}$ to 1 60	yellow.....do.....	1 50 to —
white.....do.....	1 58 to —	Hay, State.....per ton.....	22 00 to —
spring.....do.....	1 27 to 1 30	Pork, mess.....per bbl..	18 50 to 22 00
Corn, mixed.....do.....	38 to 55	prime.....do.....	17 00 to 18 00
yellow.....do.....	— to —	Beef, mess.....do.....	13 00 to 14 00
white.....do.....	55 to —	Lard.....per lb.....	11 $\frac{1}{2}$ to 13
Oats, white.....do.....	37 $\frac{1}{2}$ to 45	Butter, overland.....do.....	20 to 25
mixed.....do.....	42 to 43	California.....do.....	25 to 32 $\frac{1}{2}$
Rye.....do.....	77 $\frac{1}{2}$ to —	Oregon.....do.....	15 to 20
Barley, winter.....do.....	70 to 85	Cheese.....do.....	15 to 17
Hay.....per ton.....	15 00 to 19 00	Wool, native.....do.....	— to 20
Pork, mess.....per bbl..	13 25 to —	California.....do.....	22 $\frac{1}{2}$ to 30
		Oregon.....do.....	23 to 30

[The publication of the meteorological tables in the monthly is from this date discontinued, by direction of the Commissioner of Agriculture.]

